

Annual 1999 Report

Bimonthly Newsletter of the Oklahoma Water Resources Board

Board Approves Long-Term Strategic Plan for Agency

In September 1999, the OWRB began development of our Strategic Planning Document. Through this effort, our agency's long-term direction -- 2000-2003 -- was defined.

Our mission statement describes our many roles in the environmental arena -- managing, protecting and planning for Oklahoma's long-range water needs. We also believe that the element of professionalism is something that the OWRB is known for, and we should always keep in our focus as we serve Oklahoma.

Our agency statement of strategy tells us the efforts necessary to solidify our claim -- maintain our expert knowledge, drive our systems and practices for efficiency and effectiveness, and take the lead in forming alliances.

Agencywide performance measures are a key component of our management philosophy in order to assure the optimum use of management energy, and as important, to monitor performance. Each division has at least one critical measure. All of us are confident that we can deliver increased and improved services in the coming three fiscal years while maintaining our FY-2000 budget.

FAP Provided 73% of All Water/Wastewater Construction Loans

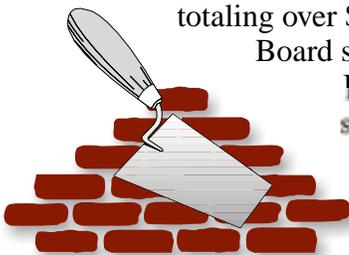
Last year in Oklahoma, the Board's innovative Financial Assistance Program (FAP) furnished 73 percent of all loan funding for water and wastewater infrastructure construction (outside Oklahoma City.) In March 1999, the Financial Assistance Division closed two separate debt issuances.

One was a \$75 million State Loan Program Revenue Bond Issue, 50 percent larger than any previous new money bond issue, and it maintained Standard & Poor's AA rating. The other was a \$2.3 million two-year note that resulted in the OWRB receiving a \$10.8 million grant from the U.S. EPA to finance vitally needed wastewater construction.

In 1999, the Board approved loans and grants for 142 cities, towns and rural water districts totaling over \$75 million, a figure which equates to 11 percent of all funding provided by the Board since inception of the innovative financing programs 17 years ago.

Interest earned on the Statewide Water Development Revolving Fund, which is the source of funding for emergency grants, topped \$25 million in 1999, surpassing the original \$25 million nest egg appropriated by the legislature to set the FAP in motion.

In 1999, the Board approved 13 Clean Water SRF loans totaling \$25,482,835; four Drinking Water SRF loans totaling \$14,444,954 and 17 Bond Series loans totaling \$26,345,000. Emergency grants to 26 communities amounted to \$1,795,940.



Governor's Water Conference Sets Attendance Record

The 20th Annual Governor's Water Conference November 17 attracted 425 water planners; officials of cities, towns and rural water districts; state legislators, state and federal agency representatives and citizens interested in water resources.

Water Board Chairman Lonnie Farmer and Lieutenant Governor Mary Fallin welcomed conferees to an agenda of experts predicting water availability, water quality, future demands and infrastructure financing strategies. Among experts taking the podium were Carolyn Richardson, director of environmental advocacy for the California Farm Bureau Federation; Gregg Cooke, EPA Region 6 Administrator; Carroll Fisher, Oklahoma Insurance Commissioner; Patsy Bragg, chair of the Tulsa Metropolitan Utility Authority; Larry Watkins, general manager of the Electric Cooperatives of Oklahoma; Duane Smith, OWRB executive director, and state and federal panelists exploring Year 2000 water topics.

Fifty-three small towns and rural water districts went home with big checks, although the checks were only poster-sized replicas of Rural Economic Action Plan (REAP) grants to come. For the first time, announcement of REAP grants for FY 2000 was a feature of the conference agenda.

At the conference luncheon, three were honored as Oklahoma Water Pioneers. They were Stillwater attorney Sidney D. Williams and the late environmentalist/teachers Jimmie Pigg of Moore and James Eddie Phillips of Faxon.

OWRB Achieved 1999 Legislative Goals

The Oklahoma Legislature again appropriated \$4.5 million for the Rural Economic Action Plan, and made available some additional funding from oil and gas production tax revenues. The OWRB received an appropriation for its share of the EPA cost match for the Drinking Water State Revolving Fund.

The weather modification measure (SB 101) marked the beginning of a partnership between OWRB and property/casualty insurance companies. It gives Oklahoma the opportunity to create a true state-of-the-art hail suppression and rainfall enhancement initiative.

The OWRB was successful in achieving the state's first law to address reduction of flood-related losses by creating the Oklahoma Flood Hazard Mitigation Program and naming a Flood Hazard Mitigation Team on which the OWRB will serve.

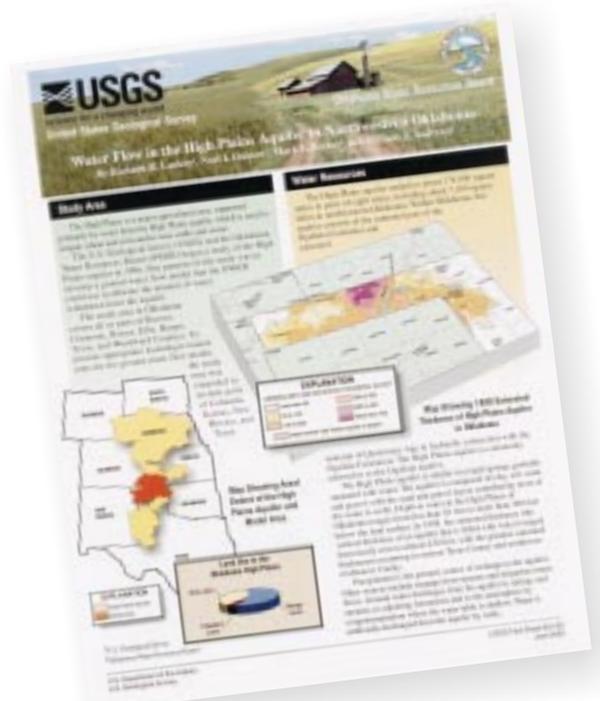
The legislature reaffirmed its confidence in the Beneficial Use Monitoring Program and first-year successes by appropriating \$500,000 for the second year of work.

HCR 1066 instructed the OWRB to work with tribal leaders, legislators and citizens of the Kiamichi River Basin in developing a plan for repayment of Sardis Lake construction costs, adopting a lake management plan, encouraging economic development and embracing infrastructure improvements in the region. It named OWRB Executive Director Duane Smith co-chairman of the committee.

OWRB, USGS Cooperate in Study of the Ogallala Aquifer

To better understand the hydrology of the Ogallala Aquifer in northwestern Oklahoma, the OWRB cooperated in a 3-year study by the U.S. Geological Survey. The study developed a groundwater flow model that will assist the Water Board in managing water supplies in the region. The 7100-square mile area under scrutiny annually produces crops and livestock valued at \$4.5 billion.

Researchers reported sharp declines in water levels in small areas of Texas County, where the aquifer is thickest,



lesser declines in Cimarron County, and declines less than 10 feet in a small area in Beaver County. Some portions of Ellis County registered rises of 10 feet or more.

Annual water use amounts to 396,000 acre-feet, 217,000 of it in Texas County; 70,000 acre-feet in Cimarron County, and 41,000 acre-feet in Beaver County. Irrigation accounts for 93 percent of total

OWRB Chairs Committee Seeking Kiamichi Basin Strategy

The Water Resources Board, with the cooperation of Choctaw and Chickasaw leaders, legislators and citizens of southeastern Oklahoma, made enormous progress following the directives of HCR 1066 in resolving long-standing issues concerning repayment of the Sardis water storage debt.

By year end, the Kiamichi Basin Working Group, co-chaired by OWRB Executive Director Duane Smith and L. V. Watkins, Choctaw and Chickasaw tribal representative, had held five meetings and the Water Board had met and made presentations to more than 30 local groups.

HCR 1066 directed the Working Group to adhere to specific cornerstone principles including a Sardis Lake level management plan developed by the Oklahoma Department of Wildlife Conservation to protect fish and wildlife; reserving a sufficient amount of water for users in the Kiamichi River Basin Region; optimizing financing opportunities for water and wastewater infrastructure; addressing the state's obligation to repay construction costs of the water supply at Sardis Reservoir; assigning highest priority to Oklahomans' present and future needs for water from the Kiamichi Basin; and protecting the integrity of the Kiamichi River.

Additionally, principles were set out for the lower basin area near Hugo Lake. They are: implementing a Hugo Lake level management plan; protecting Hugo Lake's wildlife management and waterfowl areas; addressing the Hugo PWA water supply storage contract with the Corps of Engineers; and protecting the future water supply in the Hugo area.

The Kiamichi Basin Working Group recommends to the legislature that the state pursue a formal compact with the Choctaw and Chickasaw Tribes.



Oklahoma Takes Giant Step in Flood Loss Buy-outs

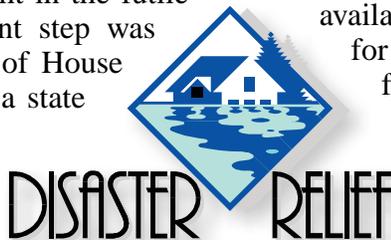
Oklahoma advanced a giant step closer to reducing flood losses incurred on repetitive loss properties -- those properties in flood zones caught in the futile cycle of flood and repair. The giant step was Governor Keating's April 6 signing of House Bill 1841, a measure which created a state flood hazard mitigation program to assist communities in the purchase and removal of repetitively flooded structures.

As coordinator for the National Flood Insurance Program (NFIP), the Oklahoma Water Resources Board worked closely with legislature, the Oklahoma Department of Civil Emergency Management and OFMA, to encourage a

bill that should result in a significant reduction in flood losses.

Although HB 1841, the Oklahoma Flood Hazard Mitigation Act, authorized no funding, it expanded uses of the Statewide Water Development Revolving Fund, allowing creation of a flood hazard mitigation account to be administered by the Board. Should funding become available, municipalities could draw loans or grants for the purchase of structures with histories of flood damage.

Proponents of the bill intended it as means to prevent building in the floodplain, encourage the purchase of flood insurance, reduce the cost of disaster response and recovery operations, and encourage cities and towns to develop comprehensive hazard mitigation plans. It also established a State Hazard Mitigation Team to review and prioritize mitigation project applications.



OFMA First in the Nation to Gain ASFPM Accreditation



In September, the Oklahoma Certified Floodplain Manager Program was the first state program in the U.S. to obtain accreditation from the Association of State Floodplain Managers, Inc. The ASFPM Certification Board of Regents approved the Oklahoma program under provisions of the Charter of the Certified Floodplain Manager Program.

The prestigious certification was almost entirely due to the hard-charging state group, the Oklahoma Floodplain Managers Association, coordinated by Ken Morris of the Water Resources Board and then-chaired by Ron Flanagan of Tulsa. Earlier the OFMA Board of

Directors had voted to pursue accreditation for the state program and appointed a Professional Development Certification Committee to design a comprehensive test. After months of hard work, the Professional Development Committee submitted it to ASFPM's Certification Board of Regents for approval.

This first-in-the-nation certification set Oklahoma out as a model and raised the bar of professionalism for floodplain managers throughout the U.S. Before year's end 68 members of OFMA had earned the certified floodplain manager designation, entitling them to display the distinguished CFM initials after their names.

Oklahoma's certification requires application and fees, continuing education and adherence to a professional code of conduct.

OWRB, Insurers Cooperate in Weather Modification

The Oklahoma Weather Modification Program, coordinated by the Water Resources Board, was able to fly high in 1999, thanks to a \$1 million legislative appropriation and \$2 million contribution from the state's property/casualty insurance companies. The program that formerly relied on legislative appropriations from the "Rainy Day Fund," now has a funding mechanism for the long term.

Senate Bill 101 approved by the 1999 Legislature created the Weather Modification Advisory Board to oversee the program and coordinate the mechanism that provides long-term funding for the state's rainfall enhancement/hail suppression program. The cooperative state/private sector cost-share effort, emphasizing hail suppression benefits, could underwrite \$3 million a year in improvements to the program. This funding

mechanism has the potential to expand the program from three project aircraft to seven and from two radars to three.

For the third year, the state contracted with Weather Modification, Inc., Fargo, N.D., to fly cloud seeding missions.

Oklahoma crop losses to hail average \$2.5 million a year, not including property/casualty claims. Proponents of the program point out that even small reductions in hail damage to crops and property justify the costs of the program, and in the long term, could reduce premiums paid by Oklahomans.

The year ended with successful cloud seeding missions that suppressed hail and brought rain to many areas following one of the state's driest and warmest Novembers.

One Book Wins ALA Award, Another Nominated

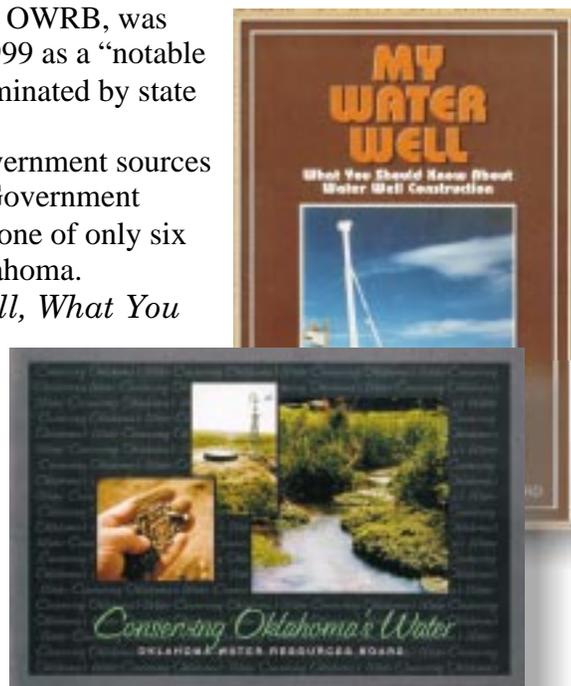
Conserving Oklahoma's Water, a booklet published by the OWRB, was recognized by the American Library Association (ALA) in mid-1999 as a "notable document," and a year-end publication, *My Water Well*, was nominated by state librarians for the award.

The elite list of outstanding publications from 43 state and government sources is compiled annually by the Notable Documents Panel of ALA's Government Documents Round Table. *Conserving Oklahoma's Water* was one of only six publications by state entities recognized and one of two from Oklahoma.

The Water Board's newest publication entitled *My Water Well, What You Should Know About Water Well Construction*, explains the state's program for water well drillers and pump contractors, what landowners should know before constructing a well, how to protect a well from contamination and many other helpful tips.

ALA selections are considered to be commendable documents less known outside their target audiences and of interest to many readers

Both booklets are offered without charge from the OWRB.



Board Updates Successful REAP Initiative

In an effort to help the Rural Economic Action Plan grant program better accommodate the small communities it is intended to serve, the Water Resources Board changed its schedule for accepting grant applications from an "open cycle" to a "closed cycle." A rule change approved by the 1999 Legislature set September 1 as the deadline for all applications for FY 2000 funding, in an attempt to better align the Water Board program with that of the Councils of Government.

As a result, on November 17, for the first time since the Oklahoma Legislature created the REAP in 1996, the Water Resources Board announced all 53 REAP grants approved for funding in FY 2000.

Previous rules relied on an "open cycle," during which applications were continually accepted, evaluated and prioritized according to the number of points scored by the community. Projects with highest priorities were funded as money became available.

The disadvantage to the open cycle was that a community whose application scored very high in priority points and had awaited funding for a year or more could be bumped by any new application that scored even one point higher.

REAP specifically targets communities of 7,000 or less, but awards priority to those of 1,500 or less. By December 31, 1999, the Board had approved 197 REAP grants totaling \$16.1 million.



BUMP is 2 Years Old, Seeks Stable Funding

The Beneficial Use Monitoring Program (BUMP), approved by the 1998 Oklahoma Legislature and confirmed by a second appropriation in 1999, was assigned by statute to the Oklahoma Water Resources Board. BUMP will assure that the beneficial uses assigned to streams and bodies of water in the Oklahoma Water Quality Standards are protected and maintained.

The strategy set out by the OWRB included extensive sampling at river, stream and lake sites for general water quality parameters, nutrients, pesticides and bacteria; fixed station load monitoring in cooperation with the USGS and others; developing standardized groundwater monitoring methods with the Department of Environmental Quality; intensive monitoring at any site identified as impaired; and prioritizing sites for remediation.

Although statutes awarded the OWRB oversight in this statewide effort, the state's Rainy Day Fund has been the source of 1998 and 1999 legislative appropriations. In 2000, the Water Board will request stable, long-term funding for the BUMP, a unique initiative that provides the sound, reproducible and defensible data critical in making informed water quality management decisions.

File Imaging Thrusts Board into 21st Century

The imaging of 743,739 pages of well logs and water rights thrust the Water Board well into twenty-first century technology. This initial stage will utilize about 34 gigabytes (GB), or 34 billion bytes, on the optical computer information storage system.

Transferring the paper records to computer-accessible electronic information groups makes them immediately accessible through employees' desktop computers.

When all of the agency's permanent files have been imaged, the 4,000 square feet of space now occupied by conventional shelves will shrink dramatically. The imaged files to fit in two storage devices about the same size as an old-fashioned juke box, with which it shares some similar workings.



WQS Now Instruct Enviro Agencies in Their Use

Passage of SB 549 in the 1999 legislative session spells out for all of the state's environmental agencies how Oklahoma Water Quality Standards will be implemented in the water quality programs for which their agencies have responsibility. The legislation set out minimum implementation procedures to assure that all agencies accurately and correctly use the WQS in their programs. Implementation Plans will be reviewed by an advisory council, chaired by the OWRB, and promulgated into each respective agency's rules.

Representing another step forward in water quality management, Use-Support Protocols were added to the Standards and Implementation Documents. Real-world environmental data are now required to make water quality management decisions, so the consistent interpretation of those data is imperative. Previously, incomplete data or faulty interpretation sometimes resulted in use-support determinations that could not be defended or repeated. Some waters were reported threatened or impaired without supporting documentation.

Now Chapter 46 of the WQS prescribes specific thresholds and exceedance percentiles to determine whether waters support the beneficial uses assigned to them or whether those uses are threatened.

The Nine-Member Board Sets Policy for the Agency



*Lonnie Farmer
Chairman*



*Richard C. Sevenoaks
Vice Chairman*



*Grady Grandstaff
Secretary*



Richard McDonald



Bill Secret



Dick Seybolt



Ervin Mitchell



Wendell Thomasson



Harry Currie



*Duane A. Smith
Executive Director*



Oklahoma Water Resources Board BUDGET

FUND	FY-97	FY-98	FY-99	FY-00
State Appropriated Funds:	\$4,200,453	\$3,866,678	\$3,631,242	\$3,761,689
Constitutional Reserve Fund			\$731,381	\$700,000
State Continuing/Revolving:				
205 Weather Modification Rev Fund	1,001,000	1,042,036	263,819	2,894,808
210 Well Drillers & Pump Installers Fund	26,000	0	818	22,000
240 Water Management Fund	390,417	318,934	352,704	274,997
420 USGS Cooperative Fund	200,000	145,985	293,575	200,000
443 Reimbursement Fund	1,289,666	561,590	1,111,483	1,951,959
444 Drinking Water Loan Adm Fund				26,012
445 Wastewater Facility Const Fund				507,955
472 WRF-SRF Account	357,410	280,467	20,008	100,000
Total Revolving Funds	\$2,263,493	\$2,349,012	\$2,042,407	\$5,977,731
400 Federal Funds	998,395	455,503	569,374	1,352,438
410 Federal Water Quality Management	5,000,000	4,675,775	3,465,128	7,500,000
Total Expenditures by Fund	\$13,463,341	\$11,346,968	\$10,439,532	\$19,291,858
ACTIVITY/NUMBER AND NAME				
01 Administration	\$2,499,150	\$1,810,076	\$1,802,566	\$2,526,258
02 Water Quality Programs	845,602	707,189	863,659	1,528,284
04 Financial Assistance	1,051,463	778,810	871,784	1,442,393
07 Planning & Management	3,902,954	3,125,185	3,121,054	3,039,447
08 Weather Modification				2,894,808
15 Office of Secretary of Environment	5,164,172	4,925,708	3,780,469	7,860,668
Total Expenditures by Activity	\$13,463,341	\$11,346,968	\$10,439,532	\$19,291,858

OKLAHOMA WATER NEWS

Bimonthly Newsletter of the Oklahoma Water Resources Board



**from
the desk
of the
Director**

Duane A. Smith

The state weather modification program began cloud seeding operations on March 1 with oversight by the Oklahoma Weather Modification Advisory Board. Sen. Robert M. Kerr is president, and I am chairman.

For the fourth consecutive year, Weather Modification, Inc., will perform cloud seeding operations throughout the state. Operations have expanded to include seeding of systems moving into Oklahoma along our borders with Kansas and Texas. Three planes based at Oklahoma City's Wiley Post Airport and in Woodward, employ radar with aircraft tracking capabilities and a full complement of meteorological systems. Already our

planes have conducted dozens of operations throughout the state.

Results from neighboring states clearly show that judicious silver iodide seeding can improve rain efficiency of certain clouds and significantly reduce potential hail damage.

We are working with Oklahoma's Congressional delegation to secure funding that will enable us to establish a state weather modification research project in cooperation with the University of Oklahoma. The Oklahoma Weather Center, a network of uniquely qualified weather-related agencies housed at OU, provide an excellent partnership opportunity to verify the effects of cloud seeding.

In an effort to share with OWRB customers the most complete, cutting-edge weather technology available, we have enhanced our website, <http://www.state.ok.us/~owrb>, to incorporate Mesonet rainfall data from the Oklahoma Climatological Survey, storm predictions from the National Weather Service Storm Prediction Center and monitoring of severe weather events through the National Centers for Environmental Prediction.

Updated radar images from our cloud seeding bases in Oklahoma City and Woodward show ongoing seeding activities and projected movements of existing storm systems. I encourage you to use this information to your best advantage in being weather-wise.



Lugert-Altus District, OWRB Study Irrigation Water Losses

How would you stop a leak in a water glass that loses a third of the water from the time you fill it until you take a drink? A similar problem faces the Lugert-Altus Irrigation District in arid southwestern Oklahoma. The district is supplied water from Altus Reservoir via a 270-mile system of canals. The reservoir and irrigation network were projects of the Bureau of Reclamation, completed in 1948. The reservoir also serves the additional purposes of flood control and municipal water supply. It is Bureau funding that enables the investigations now underway.

Every year, the district supplies more than 85,000 acre-feet of irrigation water to 300 cotton farmers in the area. (An acre-foot of water is equivalent to an acre of land covered with water one foot deep.) The total cost of the water purchased from the district each year is approximately \$2.4 million. According to District Manager Donna Kirby, about one-third of the available water in the system never reaches its destination, but instead, is lost to percolation along the canal routes. Kirby points out the very nature of the earthen canals, plus the increased water demand from the 50-year-old system contribute to leakage problems. The increased demand over the years, much beyond the system's design

capacity, caused water to run deeper in the canals, necessitating bricking some of the channel walls.

Kirby points out that the district has experimented with concrete and clay lining and PVC pipe in efforts to slow the leakage. Kirby was impressed with OWRB successes with the Geographic Information System (GIS) and Global Positioning System (GPS) in solving similar problems in smaller rural water systems, so she asked the Board's assistance.

Currently, the district is testing state-of-the-art technology in sealing the channels, in cooperation with the Bureau of Reclamation and the Water Resources Board.

Bob Fabian of the OWRB Planning and Management Division, who oversees the effort, points out that all of the methods work to some degree, but all are costly. "The current project is designed to make most efficient use of money, while maximizing the use of the water," says Fabian. He declares the biggest challenge is finding out where the main canals and branches are losing water – not an easy task, given the 270-mile length of the system. "It is important to get an overview of the entire structure to discover where and how fast water is percolating through the canal bed," he said.

Fabian explained that the GIS can display geographic data, on the entire system, as well as data on individual water gates and canals leading to the fields. These data will be gathered and input through the computer into the GIS, a task that falls to OWRB and district employees who installed meters to measure volume and velocity. The precise location of meters and all other components of the system were pinpointed by the Global Positioning System. GPS relies on a ground receiver and 24 satellites fixed in space orbit over a known location. The system mathematically triangulates the exact position of each flow meter.

Fieldwork on the project involved investigators from the OWRB Planning and Management Division, Information Services Section, Lawton field office and the district. Fabian credits Saji Varghese, OWRB engineer, for the design of a computer software program that measures and models changes between any two points. Variables that can affect the amount of water between points include the rate of seepage, as well as evaporation, temperature, humidity and wind.

Once the GIS/GPS work is complete on locations and conditions of variability, a computer model will enable operators to precisely calculate losses. For the first time, they will have a scientific basis for determining the most effective release of water.

Kirby says the district may apply for loans from the OWRB Financial Assistance Program to continue addressing the percolation problem.

Final results of the study are due in December.



Daugherty Outstanding Employee

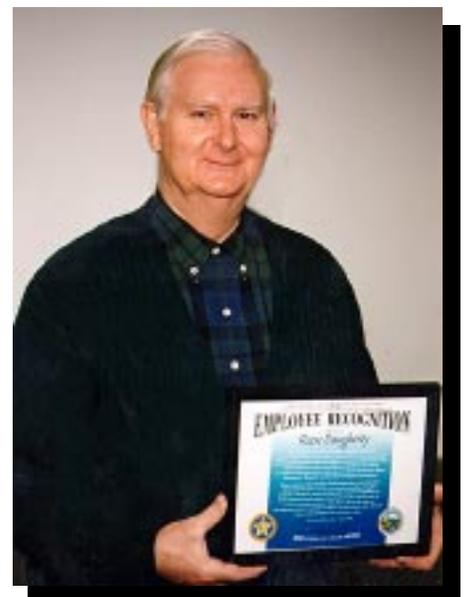
Mainstream

It is not a normal event when 90 of your peers stand up, clap and cheer when you are named Employee of the Quarter. Yet, this is exactly what happened to Reese Daugherty at a recent OWRB staff meeting. In presenting the award, OWRB Executive Director Duane Smith commended Daugherty as a 15-year veteran of the Financial Assistance Division. He is a Professional Engineer, holds a BS in civil engineering and supervises the division's engineering/technical section.

Daugherty, who is a native of Marion, Indiana, spent most of his childhood in Oklahoma City.

Smith said Daugherty is gifted in answering the most technical questions with correct, easy to understand explanations. His knowledge and unassuming ways have gained compliments from cities, engineering firms and state and federal agencies with whom he works. His co-workers recognize him as a friendly and helpful person.

Before joining the OWRB, he worked 21 years for civil engineering firms, the U.S. Army Corps of Engineers and as the city engineer for Bethany.



OWRB Honors Two Winners

Mainstream

Robin Randolph, Carl Albert Executive Fellow employed in the OWRB Water Quality Programs Division, served as judge in the Central Oklahoma Regional Science Fair held at the University of Central Oklahoma in Edmond March 7. The OWRB annually awards certificates for the best project focusing on Water Quality issues.

This year's honorees were Leah Gregg, a senior at Westmoore High School, and Justine Horsch, a seventh grader at Brinks Middle School. Gregg's project demonstrated the use of peanut shells as an additive to swine wastes to eliminate odor problems. Horsch's project showed the impact of petroleum products, fertilizers and pesticides on brine shrimp.

"The depth of knowledge that Oklahoma Science Fair participants have concerning water quality is amazing to me," said Randolph.



Left: Division I winner Leah Gregg and Robin Randolph of the OWRB discuss Gregg's project on swine farm odor. **Below:** Justine Horsch, Division II winner, with her display on water pollution.



Dr. Main Hutcheson Retires

Mainstream

Friends at the Water Board and other state agencies attended a reception February 29 at OWRB offices honoring Dr. Main Hutcheson on his retirement from the Water Quality Programs Division. However, his "retirement" will be short-lived. He plans to rejoin the OWRB on a half-time basis to continue working in Water Quality Standards Implementation.

Hutcheson joined the Board in 1979 after working on contract for one and one-half years.

He is a native of the northeastern U.S. and holds a BS in physics from the University of New Hampshire. Hutcheson earned a Masters and PhD in meteorology from the University of Oklahoma.

His work included modeling the dispersion of effluent below point source discharges for the Board's industrial waste discharge permitting program. His work has been widely published and eventually became the foundation of the Oklahoma Water Quality Standards.

An avid sportsman, Hutcheson plans to continue spending weekends and other spare time with his fly rod and his dog, "Chubsie," fishing his favorite streams in southeastern Oklahoma and other fishing spots in Mexico and Alaska.



Dr. Main Hutcheson receives a Governor's Commendation for 22 years service to the State of Oklahoma. The award was presented by Derek Smithee, right, chief of the Water Quality Programs Division.

Water Treatment Ranks High

Mainstream

The National Academy of Engineering (NAE) joins the Center for Disease Control (CDC) in honoring water treatment as one of the most significant advancements of the past 100 years.

The NAE ranked water treatment and disinfection as number four behind electrification, the automobile and the airplane in having the greatest impact on the quality of life in the 20th century. Dysentery was the third leading cause of death in America at the beginning of the century, with typhoid claiming 150 out of every 100,000 Americans every year. Chlorine disinfection and water treatment largely eliminated these problems from the population by mid-century.

The CDC listed improved water treatment as one of the 10 great public health achievements of the century.

New License Plate Coming

Mainstream



Shown holding the the special oversized automobile license plate they designed to memorialize the bombing are, left to right, Randy Ledger, Phil Forslund and James Leewright. Leewright is a longtime graphics designer with the OWRB.

Shown with the new “Victims and Survivors” tag that commemorates the April 19, 1995 Oklahoma City bombing are its designers Phil Forslund, Oklahoma Health Care Authority; Randy Ledger, General Services Administration; and James Leewright, Oklahoma Water Resources Board. The special tag will soon be available for purchase exclusively by immediate family members of bombing victims and survivors of the bombing.

The design incorporates the fence which surrounded the site, a teddy bear and colorful flowers. The designers say it is a visible reminder of the tragedy and provides a means for victims’ family members and survivors to say thank you to all who gave so generously of their time and resources in the aftermath of the bombing.

Board Announces Hearings

Mainstream

Duane Smith, OWRB executive director, announces hearings on maximum annual yield/equal proportionate share in four groundwater basins. All hearings are scheduled for 10:30 a.m.

Post Oak Minor Groundwater Basin, (portions of Comanche County) in which tentative order sets the equal proportionate share at 2.0 acre-feet per acre. Hearing will

be held at the Lawton Public Library, Meeting Room 1, 110 SW 4th, on April 4.

Hennessey-Garber Minor Groundwater Basin (portions of Comanche, Cotton, Tillman Counties) in which tentative order sets the equal proportionate share at 1.6 acre-feet per acre. Hearings will be held at the Lawton Public Library, Meeting Room 1, 110 SW 4th Street, on

April 4; Cotton County Electric Coop, 226 N. Broadway, Walters, on April 6; First Southwest Bank and Conference Center, 201 S. Main, Frederick, on April 18.

Beaver Creek Alluvium and Terrace Groundwater Basin (portions of Comanche and Cotton Counties) in which the tentative order sets the equal proportionate share at 1.0 acre-foot per acre. Hearings will be held at the Lawton Public Library, Meeting Room 1, 110 SW 4th, on April 4; Cotton County Electric Coop, 226 N. Broadway, Walters, on April 6.

Cache Creek Alluvium and Terrace Groundwater Basin (portions of Comanche, Cotton and Tillman Counties) in which the tentative order sets the equal proportionate share at 1.0 acre-foot per acre. Hearings will be held at the Lawton Public Library, Meeting Room 1, 110 SW 4th, on April 4; Cotton Electric Coop, 226 N. Broadway, Walters, on April 6; First Southwest Bank Conference Center, 201 S. Main, Frederick, on April 18.

Agencies Adopt Single Form

Mainstream

Standard guides, checklists and application forms are now available in a manual for use by all Oklahoma applicants for state and federal water and wastewater loans and grants. The new documents are the result of months of effort by members of the Funding Agency Coordinating Team (FACT.)

The manual contains sections entitled Guidance Information, Procedure for EID Review, Guidelines for Engineering Reports for Water Projects, Guidelines for Engineering Reports for Wastewater Projects, Checklist for Engineering Reports for Water Projects, Checklist for Engineering Reports for Wastewater Projects, Environmental Information Document Checklist for Water & Wastewater Projects, Guide for Preparation of EID and Appendices. Appendices provide Guidelines for Request for Proposal for Engineering Services and Agreements for Engineering and Environmental Services.

Members of the FACT Engineering Committee who assisted in development of the forms are Rick Schlegel, PE, Rural Development; Scott Myers, Department of Commerce; Robert Young, OKC Area Indian Health Services; Tim Ward, PE, Department of Environmental Quality; Reese Daugherty, PE, OWRB.

Members of the FACT Environmental Committee who assisted in the project are Kevin LeGrand, Rural Development; Jennifer Halstead and John Day, OWRB; Beverly Crisp, Department of Commerce, Marcie Martin, Department of Environmental Quality; and Greg Haase, OKC Area Indian Health Services.

According to Daugherty, the new forms and guides are available for downloading from the OWRB website: <http://www.state.ok.us/~owrb> or by calling 405-530-8800.

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THE FLOOD CURRENT

MARCH - APRIL, 2000

OFMA Hosts Reception to Promote Mitigation Funding

On February 9, members of the Oklahoma Floodplain Managers Association and the Oklahoma Emergency Managers Association hosted a reception at the State Capitol to visit with legislators concerning the importance of floodplain management and hazard mitigation. Members of the two organizations hoped to raise awareness and eliminate misconceptions regarding the amount of federal dollars available for mitigation after a flood. It was part of an effort to educate the state's leadership in the need for funding to carry out the program created by HB 1841 of the 1999 legislative session. House Bill 1841 created a comprehensive flood hazard mitigation program that prescribed buyout and removal of repetitively flooded structures.

At the Capitol Reception, OFMA Chair Ron Flanagan, OEMA Chair Jon Tilley, Nancy Kennedy, Anna Lee, Linda Reed, State Mitigation Officer Fred Liebe and I worked hard to promote state funding for the program.

Albert Ashwood, director of the Oklahoma Department of Civil

Emergency Management; Duane Smith, OWRB executive director; and Mike Melton, OWRB assistant to the director, along with Buddy Young, director; Ross Richardson, mitigation chief and Lonnie Ward of FEMA Region VI in Denton, Texas, attended to lend their support.

Joe Remondini and Carolyn Schultz of the Tulsa District Corps of Engineers set up the Corps' impressive flood model at the Capitol and also assisted with the reception. The model demonstrated the speed in which waters can rise and the sweeping devastation floodwaters can inflict. It amazed visitors and hammered home the mitigation message.

Right: Ken Morris, Oklahoma NFIP coordinator; Rhonda Kouba, OWRB; Hank Elling, OWRB; and Ron Flanagan, OFMA chairman.



Left: Carolyn Schultz, left, and Joe Remondini of the Tulsa District Corps of Engineers demonstrate flood model set up at the Capitol February 9 to show devastation floodwaters can inflict on homes constructed in the floodplain.

March is Flood Insurance Month

Governor Frank Keating has proclaimed March Flood Insurance Month. Avoid the personal hardship and economic distress caused by flood disasters by purchasing low cost flood insurance to protect your home and possessions. For information, call the Oklahoma Water Resources Board 405-530-8800.

FEMA Offers Home Study Option to Busy Administrators

One-day training classes are available for floodplain managers during May. However, this short course is very concentrated, and may be confusing to those without previous exposure to the program.

Among other training opportunities is the 5-day class that the OWRB, FEMA and the ODCEM offer annually in January. It is entitled “Managing Floodplain Development through the National Flood Insurance Program.” Many town administrators find it difficult to be away from their offices a week, so they opt for the one-day workshop.

Now a more helpful format is available to busy floodplain administrators who find it more convenient to study on their own time. To accommodate them, FEMA has developed a Home Study Course which can be ordered by calling Jim LaPrade at 301-447-1076. Continuing education credits are available to all who pass the course.

According to Ken Morris, state NFIP coordinator, beginning in 2001, all who pursue the Certified Floodplain Managers (CFM) designation will be required to complete the course as a prerequisite for taking the CFM exam.

What Sets Federal Disaster Declaration?

When a disaster is sufficiently large to overwhelm state and local resources, a governor may request a presidential disaster declaration in order to receive federal disaster assistance under the Robert T. Stafford Disaster Relief and Assistance Act. In such instances, the Federal Emergency Management Agency (FEMA) provides a recommendation to the president whether federal disaster assistance is warranted. In September, 1999, FEMA issued a rule that establishes the factors it will consider when evaluating a governor’s request.

Noting that this does not affect presidential discretion in declaring disasters and does not change published regulations and policies established under the Stafford Act, the agency stated how it will evaluate requests as they apply to its programs. Under the Public Assistance Program, FEMA will examine the estimated cost of the assistance, using such factors as the cost per capita impact within the state.

FEMA currently uses the figure of \$1 per capita as an indicator that the disaster is of sufficient magnitude to warrant federal assistance. This figure will be adjusted annually based on the Consumer Price Index. In addition, FEMA established a minimum threshold of \$1 million in public assistance damage per disaster, because the agency believes that even the least populated states can cover that level of damage.

FEMA will also evaluate the impacts of a disaster at the county, local government and tribal level, particularly if critical facilities are involved; the amount of insurance coverage in force; the degree of hazard mitigation undertaken prior to the disaster; recent disaster history; and the availability of other federal assistance.

Under the Individual Assistance Program, FEMA will consider:

- *Concentration of damage*
- *Degree of trauma*
- *Impacts on special populations, such as low-income, elderly, or unemployed*
- *Assistance received from voluntary agencies*
- *Amount of insurance coverage*
- *Average amount of individual assistance by state.*

Are You Using “Best Available” Flood Data?

When areas have been designated as Special Flood Hazard Areas on the community’s Flood Hazard Boundary Map (FHBM) or Flood Insurance Rate Map (FIRM) and no Base Flood Elevations (BFE) or an identified floodway have been developed, communities are required to apply the provisions of 44 Code of Federal Regulations (CFR) 60.3 (b) (4). This requires that communities:

Obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state or any other sources.

Data obtained is to be used by communities as criteria for requiring that new construction and substantial improvements have their lowest floors elevated to or above BFE (nonresidential structures can also be floodproofed to or above the BFE) and for prohibiting any encroachments in a floodway that could result in any increase in flood levels during occurrence of the flood discharge.

The data obtained should be used as long as it reasonably reflects flooding conditions expected during the base flood, are not known to be scientifically or technically incorrect, and represent the best data available. Data from a draft or preliminary Flood Insurance Study (FIS) constitute available data under 44 CFR 60.3 (b) (4).

Floodplain Management Bulletin 1-98 provides guidance on the use of FEMA draft or preliminary Flood Insurance Study data as “best available” data for regulating floodplain development. Copies of Floodplain Management Bulletin 1-98 can be ordered from FEMA Distribution Facility by calling 1-800-480-2520. Fax requests to 301-362-5335.

May is Flood Awareness Month

Governor Frank Keating has proclaimed May Flood Awareness Month.

360 Oklahoma communities participate in the National Flood Insurance Program. 79 other communities have not yet joined the program, and as a result, have no flood damage prevention ordinances in place to protect the lives and livelihood of their citizens against devastating effects of flooding.



Lonnie Ward, FEMA Region VI; Dorothy Martinez, NFIP, Houston; OFMA members Joe Remondini, Carolyn Schultz, Ken Morris; Albert Ashwood, Oklahoma Civil Emergency Management; and Ron Flanagan, OFMA chairman, watch Governor Frank Keating sign documents proclaiming March Flood Insurance Month and May Flood Awareness Month.

OKLAHOMA WATER NEWS

Bimonthly Newsletter of the Oklahoma Water Resources Board



**from
the desk
of the
Director**

Duane A. Smith

The Legislative Session that ended May 26 was very successful for the Water Resources Board. I am pleased to report that all of the major OWRB programs remained in place and were funded for another year. I see progress in resolving issues with the Federal Government in the Kiamichi River Basin in southeast Oklahoma. House Concurrent Resolution 1109 recognized the importance of the basin's water supply to economic development and quality of life for residents of the region, and directs the OWRB and U.S. Army Corps of Engineers to develop a water management plan. Such a plan will include long-term water supplies

for flood control, environmental and water supply purposes and identifies excess water available for export and sale. It directs the Water Board to accept proposals for the development of the Kiamichi River Basin, along with a schedule of implementation that the First Session of the 48th Legislature may consider in acting upon OWRB recommendations in the Water Resources Development Plan prepared last year. I am encouraged with our progress on behalf of the citizens of the Kiamichi Basin.

In closing days of the session, measures were approved to transfer \$1 million from the OWRB Gross Production Tax REAP Water Project Fund Account to underwrite next year's Beneficial Use Monitoring Program (BUMP) and provide the \$2.1 million match for the EPA Drinking Water State Revolving Fund.

Water projects funding in the amount of \$1.85 million was included in the Capital Improvements Bond Issue legislation. The Legislature approved means to create a Well Drillers/Pump Installers Advisory Council to assist the Board in setting rules and making decisions regarding the remediation of abandoned wells.

The Rainy Day Fund will provide \$1 million to support the OWRB Weather Modification Program for the sixth consecutive year of operation. The program is designed to mitigate hail damage and reduce the impact of drought. Senator Robert M. Kerr has championed the program and presided over the Weather Modification Board

Along those lines, on May 22, it was my pleasure to chair a meeting of the Oklahoma Weather Modification Board at the Capitol during which state and federal experts briefed us on the benefits of a 5-year research program to verify the effects of cloud seeding.

The research effort would rely on a partnership between the Oklahoma Weather Center at OU and NCAR, an agency of the National Oceanic and Atmospheric Administration.

We are convinced that the state's cloud seeding program works, but we believe it is imperative that we provide verifiable results to justify our investment. We will work toward procuring state/federal support for a research component.



Safety of State's 4500 Dams Focus of Water Board Program

Marking the anniversary of the worst U.S. dam failure, the first National Dam Safety Awareness Day was observed May 31. It was the anniversary of the South Fork Dam failure at Johnstown PA, in 1889, when a deadly rush of water and debris killed 2209 people. Since then, thousands of dams have been built nationwide, bringing life-sustaining benefits to society. However, over time, it has become clear that these structures - some massive and some

only a few feet high - require expert engineering and maintenance throughout their lifetime. Since that 1889 failure, hundreds of people have lost their lives and billions of dollars in property damage have been sustained due to dam failure.

To focus national attention on dam safety, the Federal Emergency Management Agency (FEMA) sponsored an event in Washington, D.C., featuring remarks by FEMA Director James Lee Witt.

The theme was “sustain the momentum,” achieved by keeping American communities safe from disasters through the joint efforts of all community stakeholders. The push of National Dam Safety Awareness Day is to make the public the primary stakeholder in safe dams, and to ensure citizen interest and involvement in safe dams is sustained over time.

There are more than 75,000 dams in this country, an estimated 58 percent of them privately owned. Although most are well maintained, many dams lack a responsible owner or are owned by individuals without adequate resources to maintain the structure. Some dams fail to meet modern safety standards, based on downstream development/population increases. Almost every state has these “unsafe” structures.

In Oklahoma, responsibility for dam safety is assigned to the Oklahoma Water Resources Board. According to OWRB Engineer Cecil Bearden, who administers the state dam safety program, there are approximately 4500 dams in Oklahoma, most of which are small, privately owned, earthfill structures. Bearden says 165 of these dams are classified “high hazard,” which means they possess the potential to inflict loss of life and property, should the structure fail. He emphasizes they present little ordinary danger and the classification simply means there are habitable structures, people or animals downstream.

Owners of dams with the potential for loss of life or property in the event of failure are required to have on file with the OWRB an emergency action plan which includes notification of state and local authorities and the evacua-

tion of people and livestock downstream. The OWRB also requires a thorough annual inspection of these structures by a qualified engineer.

The most common challenges to the integrity of Oklahoma’s small dams are deteriorating conduits, tree and brush roots and holes made by rodents. These are

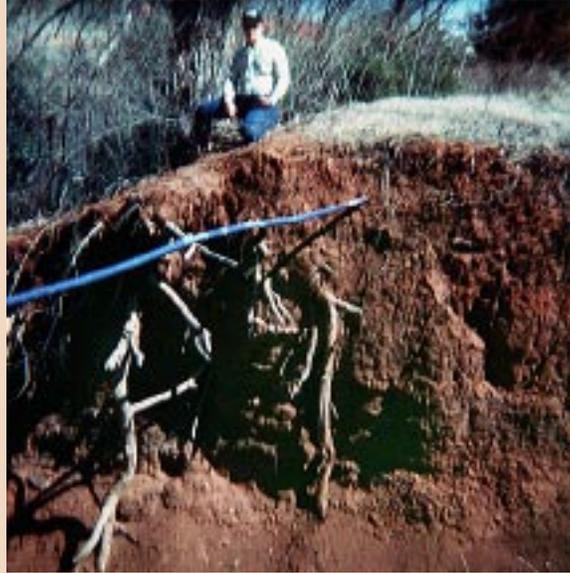
problems that usually can be headed off with routine inspection by the dam owner.

“If a dam owner suspects a problem, he/she may call the OWRB and we will try to help,” said Bearden. Although the program is handicapped by a shortage of personnel, Bearden is able to accomplish an enormous amount of work by utilizing computers to model the path of water loosed by a dam breach and a database containing specific information on each dam. He is assisted in the field by an all-terrain vehicle (ATV) equipped with a Global Positioning System (GPS) and laser range finder, which allow him to develop reservoir capacity data and determine the exact location of habitable structures in the breach inundation area. He tracks progress in his database to make certain the problem is

resolved. Bearden says the ATV saves hours of walking through rough terrain. He estimates the new equipment and technology have reduced the time spent in surveying and inspections by 80 percent.

The life span of an earthfill dam is anticipated to be 50 years and many Oklahoma dams are approaching that age. However, proper maintenance and regular inspection can significantly extend a dam’s life expectancy. Bearden points out as example, the state’s oldest dam at Lake Lawtonka at Lawton, constructed in 1905, modified to accommodate a growing population and still in service impounding a portion of the city’s water supply.

“There is an alarming lack of public education concerning the need for regular maintenance and repair,” Bearden said. “Dam safety is not usually in the public view, unless a dam fails. But, it is an issue that affects the safety of millions of people in the U.S. who may live or



Water seeping along tree roots that invaded and undermined the earthen structure caused the piping failure at Brixton Heights Dam in west Oklahoma City. Gas line through the dam possibly created a path for runoff to weaken the embankment and contribute to the breach. OWRB Engineer Cecil Bearden sits at the top.

work in the path of a potential dam failure,” Bearden points out.

Increasing public safety and sustaining resources means funneling dollars toward improvements to the nation’s dams. The lack of funding for dam upgrades has become a serious national problem. According to preliminary results of an Association of State Dam Officials study, the total investment to bring U.S. dams into safe and working condition and to remove out-of-service structures exceeds \$40 billion. It will require a concerted public/private partnership to provide funds over the long term to accomplish that goal.

The Association of State Dam Safety Officials emphasizes that there are hundreds, perhaps thousands, of dams in every state, the vast majority bringing irreplaceable resources to millions. These resources include water supply, irrigation to millions of acres of farmland, effective flood control, recreation, and clean, renewable energy through hydropower.

However, Bearden, who is an ASDO member and western region board representative, warns that these dams may be sleeping giants -- “out of sight, out of mind.” He says it is critical that development does not continue to encroach into the dam breach inundation zones. State dam safety officials continue to see local zoning boards and land developers unaware of the need to stay out of potential flood pathways. This is a serious trend that needs to be reversed in Oklahoma and all across the U.S.

For more information about dam safety and the Association of State Dam Safety Officials, see www.damsafety.org. For information on the Oklahoma Dam Safety Program, call Cecil Bearden, OWRB, 405-530-8800 or see www.state.ok.us/~owrb.



Cecil Bearden, oversees the Board's dam safety program with the assistance of an all-terrain vehicle equipped with GPS and laser range finder. The ATV saves hours of inspection time in rough, overgrown terrain. The specialized computer equipment helps develop reservoir capacity and determine the precise location of habitable structures in the breach inundation area.



Resolution Asks Support in Compact Dispute

Board convinced all other remedies are exhausted in securing Oklahoma’s share of Palo Duro water

A resolution forwarded to Governor Keating and state leaders in April, recommended the State of Oklahoma pursue redress from Texas concerning the Palo Duro (TX) River Authority’s failure to abide by terms of the 1950 Canadian River Compact. Specifically, the Board wants Oklahoma’s share of water from Palo Duro Reservoir completed in 1991 on Palo Duro Creek, a tributary of the Beaver-North Canadian River in Hansford County, TX. The reservoir lies about 12 miles upstream from the Texas-Oklahoma state line.

The Beaver-North Canadian River supplies water to Canton Reservoir, a critical component in Oklahoma City’s water supply regime. The Board recommended that Oklahoma file a lawsuit in the U.S. Supreme Court to address long-standing compact violations.

Complaints concerning allocation of Palo Duro waters date to 1990, when Lewis Kamas, then Oklahoma Commissioner, lodged objections that Texas had failed to construct conduit or gates to release sufficient flows of water to reach the Beaver-North Canadian River and Canton Reservoir, farther downstream.

The issue continued to be the focus of discussions by Les Kamas of Freedom, who succeeded his father as Oklahoma's commissioner to the compact involving Oklahoma, Texas and New Mexico. Texas officials on the Canadian River Commission have refused to acknowledge any violation.

Other infractions of compact provisions include Texas' use of the reservoir for recreational purposes, not municipal and domestic uses, the sole uses set out by the compact.

Duane A. Smith, OWRB executive director, points out that Oklahoma's challenge in the high court would be expensive, in excess of \$1 million. However, it is critical that the state proceeds in protecting its rights to water impounded in Palo Duro Reservoir.

"We have simply exhausted all other possible remedies, and the only avenue remaining is for the State of Oklahoma to initiate action against the State of Texas in the U.S. Supreme Court," he asserted.

Smith said Oklahoma is party to four interstate stream compacts with neighboring states. Compacts clearly spell out how much water a signatory state is allowed to develop or store on the interstate stream. It is the role of the Water Resources Board to support the compact commissioners appointed by the Governor with technical assistance and background information. He pointed out that any state that tolerates a violation of any compact sets a dangerous precedent.

"The City of Oklahoma City stands to lose a portion of its water supply, as well," Smith pointed out. "Oklahoma City holds a 1939 decreed right perfected by beneficial use of waters of the North Canadian River. Texas' Palo Duro construction does not secure and protect present developments in Oklahoma," he said.

Smith said the Resolution signed by members of the Water Resources Board was forwarded to Attorney General Drew Edmondson, Governor Frank Keating and both houses of the Oklahoma Legislature. He said legislative leaders would be asked to consider an additional appropriation to the OWRB for legal and background expenses in initiating the action.



Planning Takes Sting Out of Drought

Drought is an inevitable part of every climate on the planet, even the tropical rainforests, according to the National Drought Mitigation Center. The impacts of drought hit hardest when people place too high a demand on the water supply. As the human population grows, so does the amount of water that humans will need. It appears that vulnerability to drought and water shortage is increasing as well. However, the effects of drought can be mitigated by balancing water supply and demand.

Risk management rather than crisis management will have positive effects:

- ◆ Although drought is a low-profile natural disaster, it can be more costly than floods and hurricanes.
- ◆ Planning ahead to mitigate drought gives decision makers the chance to relieve the most human suffering at the least expense.

Drought planning is essential, but there are obstacles, among them:

- ◆ No single definition of drought works in all regions.
- ◆ During crisis, people conserve, but once the

crisis is over, they lose interest in planning for the next one.

- ◆ Responsibility is divided among many governmental jurisdictions.
- ◆ The U.S. lacks a unified approach to managing natural resources, including water.
- ◆ Historic responses have been ad hoc, responding only to specific drought events.
- ◆ Policies such as disaster relief and outdated water allocation practices may deter sound, long-term natural resources management.

El Paso Experiments with Water Conservation

Researchers from the University of Texas at El Paso are working to convince residents of the city that the region is running out of water. Despite an arid climate that provides a meager 8.65 inches of rainfall annually, water seems available at every turn of the tap. However, doomsayers warn that the Hueco and Mesilla aquifers that supply El Paso, as well as Las Cruces (NM) and Juarez, Mexico, face depletion by 2025.

Several strategies have been advanced to induce water conservation, especially in summer months. Early on, researchers recruited 100 volunteers who were promised monetary rewards of \$250 if they reduced their May-August water use by 35 percent, and \$100 if they cut consumption by 20 percent. At the end of the study, participants' meter readings were compared to those of previous summers.

Study seeks incentives to promote conservation

It seemed to work and it appeared that paying out incentives cost less than providing the saved water would have. However, the possibility occurred to researchers that perhaps study participants had been self-selecting. They may have been people who would have conserved water anyway.

The next summer's study used a random group including homeowners and businesses. Researchers are comparing participants' data to two neighbors' data because rainfall and different factors affect water use. They pointed out that it might rain in one area, but remain perfectly dry three blocks away, requiring lawn watering.

Participants who save 16 to 30 percent will earn \$50; those who save 30 to 45 percent will make \$150; those who cut back 46 percent or more will earn \$250.

Glitches could happen if people decide to do laundry at the laundromat to save water or if they go on vacation during those months. Perhaps people engage in water-saving behavior only to earn money, then revert to their wasteful ways. During the study participants were using water left over from showering to water plants, but skeptics doubt if such conservation efforts carry through the winter months.

Researchers also point out the futility of Texans' efforts if citizens across the border in Juarez shun conservation measures. El Paso is in the process of converting to a renewable source, the Rio Grande River, by purchasing water rights from farmers in the fully allocated river. It is of little importance unless residents on both sides of the river cooperate in conserving the dwindling water supplies. El Paso water officials say Juarez is finally acknowledging that something must be done, and done very soon. They see hope in the International Boundary and Water Commission, a cooperative effort between Texas, New Mexico and Mexico, formed to address common water problems.



Employee Appreciation Breakfast

Mainstream

Execs Treat Employees to Bountiful Appreciation Breakfast

On May 3, in observance of Public Service Recognition Week May 1-7, OWRB management treated employees to a breakfast party as kickoff to the monthly staff meeting. Shown enjoying dishes prepared by their bosses are, left, Ken Morris, Mike Sughru and Mary Whitlow; right, Michael McGuire, Paul Koenig and Lisa Penderson.



New Bottle Sports Filter

Mainstream

A new sport water bottle features its own filter system, conveniently incorporated in the straw. With each sip, water is pulled up through the filters, purifying the water as one drinks.

The bottles are being test-marketed at two Arizona universities, and if they are successful, they may soon be offered on other campuses.

The high-tech water bottles have a two-filter system in a 2-inch long plastic straw. According to Environmental Solutions' developer, the first filter is made out of natural materials, such as crushed shells, which remove floating particles, metals and chemicals. The second section is a traditional carbon-based filter that removes chlorine and lead.

The bottle filters will purify 100 gallons of water – about four months' supply of drinking water. Replacement filters cost about \$20 for three, which is considered a year's supply. The high-tech water bottle costs \$30 — a bargain, says its developer, if a person drinks a couple of bottled waters a day. The bottle is a one-time purchase and requires refitting with a new filter about three times a year.

Drillers Ask More Enforcement

Mainstream

The Drillers/Pump Contractors Committee, an ad hoc advisory group to the OWRB, has long favored creation of a Well Drillers and Pump Installers Advisory Council to oversee the industry. House Bill 2033, signed by Governor Keating May 8, will do precisely that.

HB 2033 authorizes the Oklahoma Water Resources Board to establish the Advisory Council, appoint members and hold meetings at the call of the OWRB executive director. Once rules are in place, the Advisory Council will review rules and recommend specific uses of money in the Drillers/Pump Installers Remedial Action Indemnity Fund. The fund is composed of license and renewal fees paid to the OWRB annually by the state's drillers and pump contractors.

The drillers had encouraged the OWRB to "put teeth" in the laws regulating water well drillers and pump contractors as means of ensuring all well construction meets minimum standards. They recommended earmarking a portion of the Drillers Indemnity Fund to hire inspectors to make impromptu visits to water well drilling sites.

According to Gary Glover, who administers the OWRB Drillers/Pump Contractors program, HB 2033 also allows Indemnity Fund monies to be used for remediation of faulty or abandoned wells or boreholes that pose an immediate threat of pollution.

Rain Barrels are Back in Style

Mainstream

A couple in Portland, OR, are the first in their city to apply for and receive a permit to harvest rainwater. In a climate that provides plenty of rain, the couple say it's easy and economical and the technology that drives the system is 50 years old.

The rainwater that falls on their home is transported by storm drains to a 1500-gallon barrel. Then the water is sanitized, pumped into the house and ready to be used just like city water. The system collects about 750 gallons of water every time it rains an inch.

The owners say all parts needed to construct the system were purchased at local farm supply and hardware stores for about \$1500. To ensure a safe drinking water supply, they agreed to test the water twice a year. The system purifies the water with a set of two microbial filters and an ultraviolet light sterilizer. The filters remove certain bacteria, while the sterilizer disables the remaining bacteria from reproducing. The barrel is scoured once a year with bleach.

So far, declare the homeowners, the water tests cleaner than city water.

Officials who reviewed the permit application asked if such water harvesting could possibly damage the city's water system.

When a large amount of water is used on your street – by firefighters, for example – water in your pipes can be drawn out of your house to compensate. The water that was once in your house could possibly come out of a neighbor’s faucet. A “reduced pressure backflow prevention device” was installed to essentially remove the couple’s home from the city water pool, a modification which would not have been necessary, had rainwater been the exclusive supply.

However, in some unusually hot, dry summer months, the couple must depend on city water until rains refill their barrel.

New Groundwater Report Ready

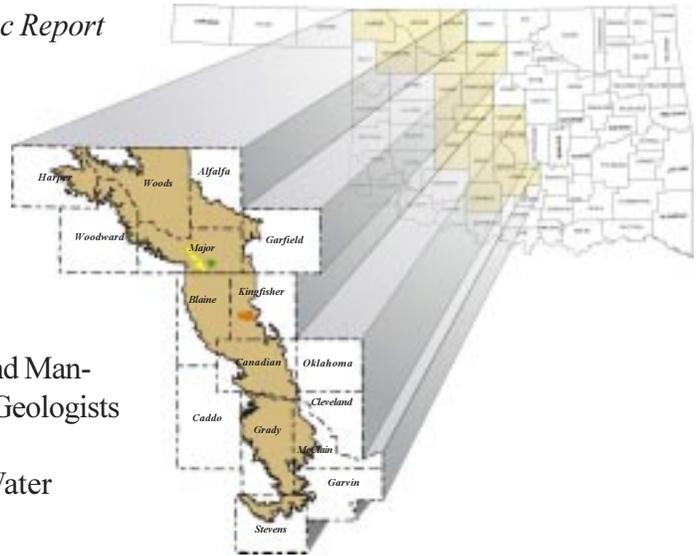
Mainstream

Librarian Susan Birchfield announces the availability of a new OWRB groundwater publication entitled *Hydrogeologic Report of the El Reno, Fairview, Isabella and Loyal Minor Groundwater Basins in Central Oklahoma* (Technical Report 2000-1).

The report contains information on the basin’s physical setting, descriptions of the aquifer parameters, storage and yield capabilities, water use and prior groundwater rights, color maps and analyses of water quality.

Geologist Mark Belden from the Board’s Planning and Management Division authored the report, with support from Geologists Noel Osborn and Bob Fabian.

The report costs \$5. To order, call the Oklahoma Water Resources Board at 405-530-8800.



Summers Wins Employee Award

Mainstream



Jim Summers

Jim B. Summers, 15-year employee of the Information Services Section of the Administrative Services Division, was named Employee of the Quarter at staff meeting on March 30. The award recognizes extraordinary performance and includes a certificate and food and entertainment passes. Executive Director Duane Smith, who presented the award, praised Summers’ work in keeping the OWRB Local Area Network (LAN) of computers functioning smoothly. “He does such a good job and so effortlessly that we sometimes forget just how good he really is. He is the ultimate team player,” says Smith.

Summers is a driving force in the agency’s effort to implement new technology and assists with day-to-day problem solving. He schedules much of the unit’s work after hours and on weekends to avoid interrupting the workflow of the agency.

Summers is a native Oklahoman, born in Midwest City. He is a graduate of Midwest City High School and University of Central Oklahoma. He holds a BS in computer science.

Summers and his wife, Daphne, have one son, Randall, and the family lives in Norman.

Water News Editor Retires

Mainstream

Mary E. Whitlow, longtime public information officer for the Oklahoma Water Resources Board, retires July 1. She is founder and editor of the *Oklahoma Water News*, the newsletter of the OWRB since June 1979. She joined the agency in March 1979.

In addition to overseeing the agency's newsletter, she wrote, edited or contributed to more than a dozen publications including the *Oklahoma Comprehensive Water Plan*, two editions of *Oklahoma's Water Atlas*, *Rural Water Systems in Oklahoma*, 20 annual reports, and booklets on water conservation, floodplain management, weather modification, loan/grant assistance, water rights, water well drilling and a number of other Board programs.

Whitlow is coordinator of the Annual Governor's Water Conference, this year in its twenty-first year. She has arranged legislative and conference receptions and prepared printed pieces to support the conference. Her duties have included writing timely press releases, audiovisual presentations on OWRB programs, speeches for agency executives and awards for fellow employees.



Mary E. Whitlow

GIS Day Draws Hi-Tech Crowd

Mainstream



Kevin Koon, Water Board GIS specialist, explains the Board's application of GIS to Ruth Dews-Lounds of the USDA.

The State GIS Council sponsored the Sixth Annual GIS Day in the fourth floor Capitol Rotunda on April 12. Geographic Information Systems is a combination of computer equipment, software and data that allows the analysis and display of spatial (land-based) information on separate, specialized layers.

Water Board GIS Specialists Kevin Koon and Mike Sughru and Jann Hook, Informations Services Section Head, staffed the OWRB exhibit. The OWRB display was one of 30 demonstrating GIS applications. Exhibitors included state agencies, universities and vendors.

The day-long event attracted hundreds of visitors, including Governor Keating, legislators and students.

At the May 9 Board Meeting:

Executive Director Duane Smith reported that the trip to southeast Oklahoma to meet with Lt. Gov. Mary Fallin and residents was successful in resolving some local water supply issues. He pointed out that there are still some water line easements that need to be obtained, as well as an opinion from the bond counsel before financing can be finalized. He said resolution of the Sardis debt is "on the front burner." He said an Interlocutory Agreement is being prepared between the OWRB and the United States that would allow the Sardis Lake Water Authority the use of the lake storage needed for the initial phase of the local water supply project. Meanwhile, the Office of Management and Budget is developing a purchase price acceptable to the Corps of Engineers and the State of Oklahoma.

Smith, who had recently returned from the Red River Compact meeting, reported that negotiations were deadlocked concerning Texas' infractions in water use at Palo Duro Reservoir. He pointed out that Texas is planning to build another impoundment on Sweetwater Creek that could jeopardize the water supply available to the Altus-Lugert Irrigation District. The OWRB has recommended to Governor Keating and the Legislature that Oklahoma take the Palo Duro dispute to the Supreme Court for resolution.

Joe Freeman, chief of the Financial Assistance Division asked and was granted Board approval of emergency grants to Custer City Public Works Authority, City of Norman and Hugo Municipal Authority.

On the Planning and Management agenda, the Board approved five temporary permits and five regular permits for groundwater use and five regular permits for stream water use. The Board approved water well driller/pump contractor licenses for Harold Adney, Harold Adney Water Well Drilling; Eugene Daugherty, Tri-State Drilling; Gary P. Hill and Gregory P. Slade, Walker-Hill Environmental, Inc.

Financial Assistance Program Update

Approved at the April & May, 2000 Board Meetings

FAP Loans		
<i>Enid MA</i>	\$	<i>2,510,000.00</i>
<i>Comanche Co. RWD #2</i>	\$	<i>1,045,000.00</i>
CWSRF Loans		
<i>Duncan PUA</i>	\$	<i>8,749,000.00</i>
<i>Norman UA</i>	\$	<i>4,850,000.00</i>
<i>Enid MA</i>	\$	<i>1,374,000.00</i>
Emergency Grants		
<i>Town of Mulhall</i>	\$	<i>100,000.00</i>
<i>Custer City PWA</i>	\$	<i>23,900.00</i>
<i>City of Norman</i>	\$	<i>100,000.00</i>
<i>Hugo MA</i>	\$	<i>100,000.00</i>
REAP Grants		
<i>Kingfisher County RWD #3</i>	\$	<i>29,975.00</i>
<u>TOTALS AS OF MAY 9, 2000</u>		
#APPROVED	FAP Loans - 22	CWSRF Loans - 94
Amount	\$316,770,000.00	\$330,991,191.52
#APPROVED	Emergency Grants - 448	REAP Grants - 228
Amount	\$25,860,363.08	\$18,390,718.60
#APPROVED	DWSRF Loans - 8	Hardship Grants - 2
Amount	\$26,226,954.90	\$1,038,752.30



OKLAHOMA Water News

Bimonthly Newsletter of the Oklahoma Water Resources Board

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Duane A. Smith
Executive Director

From the Director

I'm sure many of our readers are all too aware of the much-publicized opinion issued July 5 by the Oklahoma

Supreme Court concerning the Kronseder water rights case. (You'll find a detailed article on the case in this issue of the *Water News*.) This ruling could have monumental im-

plications on water users in Oklahoma and, as a result, Water Board members, General Counsel Dean Couch, myself and other staff have had numerous deliberations since the decision on how best to proceed in conducting the "water business" of Oklahoma.

At the July Board meeting, acting on staff's recommendation, the Board reluctantly tabled consideration of groundwater permit applications scheduled for action (in-

See Director, Page 3

OWRB Must Consider CAFO Pollution In Water Use Deliberations, High Court Rules

In its deliberation of a northwest Oklahoma groundwater use permit, the Oklahoma Supreme Court concluded in a surprise ruling on July 5 that the Oklahoma

Water Resources Board must consider whether pollution will occur as a result of *all* swine-related operations, not just those directly related to water usage.

Existing state law requires the Water Board to determine that "waste by depletion or waste by pollution" will not occur as a result of proposed groundwater usage. The issue, which routinely includes scrutiny of proper water well construction and other issues related to the extraction and transportation of water, is one of four points of law that must be satisfied prior to approval of any groundwater permit application. The Supreme Court finding, however, extends the OWRB's currently perceived jurisdiction to include the water's "ultimate" use, according to OWRB General Counsel, Dean Couch.

"Since enactment of the Environmental Quality Act in 1993, which clearly set out the jurisdictional areas of environmental agency responsibility, we've operated under the assumption of

See Supreme Court, Page 2



Hog barns and feed bins at the Kronseder facility in northwest Oklahoma.

Supreme Court . . . Continued

legislative intent that the State Department of Agriculture has primary jurisdiction over the disposal of animal waste while the Water Board, on the other hand, is responsible for ensuring the proper beneficial use of water supplies,” Couch pointed out. “However, in the Kronseder case, the Supreme Court has determined that the two agencies have concurrent jurisdiction over potential water pollution by Oklahoma’s confined animal feeding operations.” Five Supreme Court justices fully concurred with the decision, two concurred in part and two abstained.

In its consideration of future groundwater permits, Couch said the decision impels the OWRB to apply the waste by pollution test to all beneficial uses of water, not just uses related to CAFOs and associated operations. In this regard, he added, irrigators who chemigate or use fertilizers on their land or municipalities and industries who utilize state waters in their land application processes or employ lagoons to treat waste must similarly satisfy that point of law.

The Kronseder permit was originally approved by the OWRB in October 1996, then appealed to District Court in Woodward County and, later, to the Oklahoma Supreme Court in February 1998. In its decision, the state’s high court has directed the OWRB to re-hear the permit application, stating that the agency did not properly consider waste by pollution. Specifically, the Board must hear appropriate evidence to determine if pollution will occur through the land application of effluent or any other use of groundwater at the applicant’s swine facilities. In addition, Kronseder must present evidence

“The impacts of this case could be monumental and could substantially alter Oklahoma’s longstanding water rights administration process.”

related to the potential effects of effluent irrigation on the underlying groundwater formation.

“The impacts of this case could be monumental and could substantially alter Oklahoma’s longstanding water rights administration process,” according to OWRB Executive Director Duane Smith. “First, the Court says we must determine and ensure that ‘waste will not occur’ rather than ‘waste is not likely to occur’ in the usage of groundwater. That minor change involving probabilities results in a huge departure from our conventional approach and will require the acquisition of additional resources and staff with the expertise to

make that determination. This further complicates the process municipalities, industries and other water users must go through to receive a groundwater use permit.”

“Secondly,” Smith added, “the Court’s strict definition of pollution, which includes any alteration of the physical, chemical or biological properties of natural waters, could mean that introduction of any foreign ele-

ment to groundwater constitutes unauthorized contamination.”

At the OWRB’s July meeting, Smith and Couch briefed the agency’s nine-member Board on the ruling. The Board unanimously agreed with staff’s recommendation to postpone consideration of all groundwater permit applications on the agenda until a strategy is developed to deal with implications of the decision.

“Although tabling consideration of those permits was an unusual and difficult decision, the Board concurred that we must proceed very carefully to ensure that the OWRB is following proper procedures, as determined by the State Legislature and Supreme Court, while ensuring that the rights of water users in this state are sufficiently protected. Specifically, the Board instructed staff to seek clarification on the ruling from the Attorney General and Governor’s Office. It’s also possible that we might seek assistance from the Legislature in identifying a course of action,” Smith said.

While the Supreme Court ruling turns the waste by pollution issue on its ear, the Water Board triumphed on two other matters related to the case. The OWRB, according to Supreme Court Justice Ralph B. Hodges, prevailed on its determination at the permit hearing that state groundwater, not stream water, laws should be followed regarding Kronseder’s proposed use of a spring in the area. The Court reaffirmed the 1978 Cabelka case, which originally set precedence that the point of inception for a spring refers to the point from which the spring emanates – i.e., although springs originate from a groundwater source, water from a spring is



This lagoon serves as a waste repository for the Kronseder swine operation.

legally considered stream water.

Regarding Kronseder's application for groundwater from a narrow 120-acre tract of land near the North Canadian River, from which a majority of the applicant's water would be withdrawn, the Court upheld the OWRB's decision to limit the number of water wells operating at any one time. This "reasonable use" determination was implemented as a condition to respond to concerns by the protestants that groundwater depletion would occur upon full operation of all six wells.

Within a week of the Kronseder decision, the Supreme Court remanded a second case back to the Water Board for further hearing. The permit in question involves the use of swine effluent to irrigate crops in Texas County.

Board Officers Unchanged

At their July meeting, OWRB Board members voted to retain current officers through the next year. Remaining in their positions are Lonnie Farmer, Chairman; Richard Sevenoaks, Vice-Chairman; and Grady Grandstaff, Secretary.

Director . . . Continued

formal disposition and special consideration) and, in August, remanded those applications back to staff for additional information and/or rehearing. This necessary action should provide us with sufficient time to seek clarification of the ruling from the Attorney General and Governor Keating and, in turn, ensure that the rights and requirements of water users in this state are sufficiently protected, especially as we enter the inevitable dry season.

By now, repeat readers of the *Oklahoma Water News* have probably noticed that our format has changed substantially from previous issues. This bi-monthly agency newsletter serves as a vital medium of communication between the Water Board and you, our customers. In this regard, our goal is to provide you with a timely, quality product that keeps you informed of ongoing water-related issues of importance to Oklahomans. I also remind you that this and previous editions of the *Water News* are available on our website. Hopefully, this "re-tooling" of the *Water News* meets your approval and expectations of the Oklahoma Water Resources Board in our effort to improve the method through which we spread the word about Oklahoma's water resources. I strongly encourage you to submit any comments or suggestions you may have about our new format or how we can better serve you to Brian Vance, our new editor, at (405)530-8800 or email brvance@owrb.state.ok.us.

Rural Water Survey Update Underway

The OWRB's revision of its popular 1998 publication, *Rural Water Systems in Oklahoma*, is now underway. This update will incorporate hundreds of water lines that have been extended or replaced since the mid-1990s. Used as a tool by both system managers and water resource professionals, the "new" rural water survey will continue to aid in the development of regional water systems, ease system expansion and improvements and serve as a recruiting tool for economic development in the state.

To complete the project, the Water Board will require the assistance of rural water districts and operators throughout the state, according to Nathan Kuhnert, hydrologist in the agency's Planning and Management Division.

"The Rural Water Systems publication is only as good as the information and data we feed into it and we rely on rural water system operators to provide us with accurate, updated and timely information. While this is a voluntary effort, the success of the update depends almost entirely on the input provided by each system," Kuhnert pointed out. He added that the Oklahoma De-

partment of Environmental Quality and ORWA have each provided valuable support in early preparation of the publication.

Kuhnert says that, in September, each of the approximately 780 rural water systems in Oklahoma will receive in the mail a 24- by 36-inch hard copy of their district's map on which they will be asked to locate and mark new lines, upgrades and other recent infrastructure modifications, then return the updated map. The OWRB will then compile the data and update existing GIS coverages which will be included in the final publication scheduled for release next year.

The OWRB will present a brief overview of the project at the upcoming Oklahoma Rural Water Association Training and Technical Expose, September 20-22, at Fountainhead Resort in Checotah. For more details on the training session, please contact the ORWA at (405)672-8925.

Contact Nathan Kuhnert at (405)530-8800, or by e-mail at nrkuhnert@owrb.state.ok.us, for questions or comments concerning the update of the *Rural Water Systems in Oklahoma* publication.

Tulsa Reservoir Study Nears Completion

As part of a multi-agency effort to identify and control nutrients impacting the City of Tulsa's water supply, OWRB staff are wrapping up a three-year water quality study of the Spavinaw Creek watershed. At the center of the project are Lakes Eucha and Spavinaw, a two-lake system northeast of Tulsa that serves as the primary drinking water source for the city and many other communities in the region.

According to Paul Koenig, an OWRB environmental specialist who is directing the \$365,000 cost-share study with Tulsa, the Water Board is not focusing so much on the source of pollution, but rather on the impacts contaminants are having on the lake system.

"While many agencies and organizations are and must be involved in this effort, the Water Board's specific charge is to identify a nutrient value through which algal growth in the lakes is sufficiently controlled," he said. "Examination of the lake and its tributaries to determine the relative contribution of contaminants which are spawning excess algal growth is a key to establishing feasible management options," Koenig pointed out.

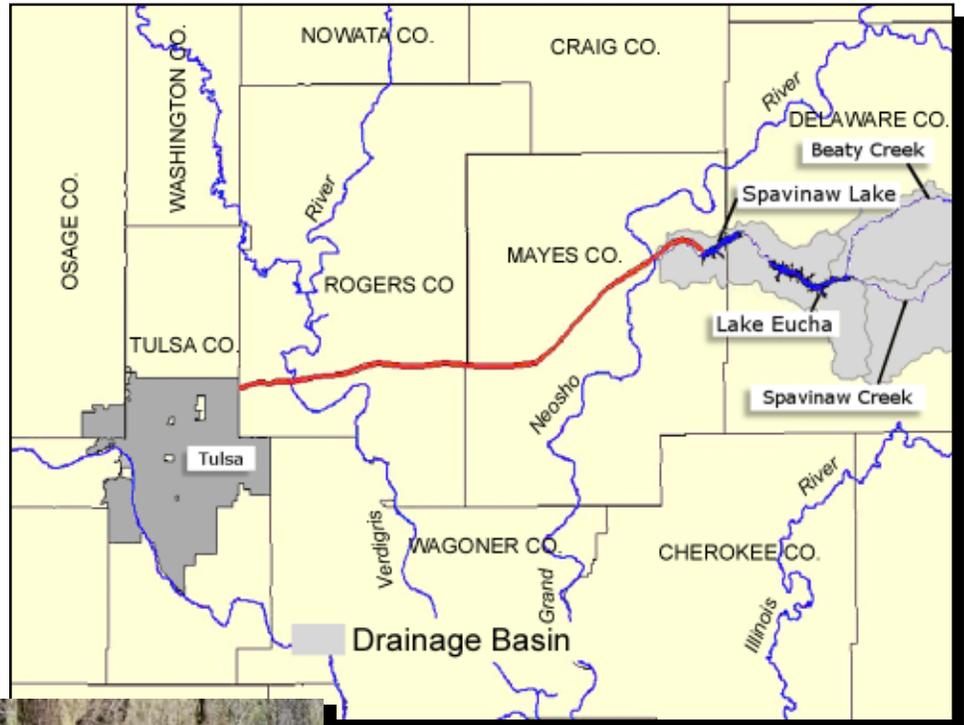
A 1996 study by the Oklahoma Conservation Commission identified a relationship between phosphorus in Lake Eucha to the proliferation of poultry activity in the watershed. An estimated 700 poultry houses exist in the Eucha/Spavinaw watershed, 60 percent of which is located in Arkansas. One house typically produces about 110,000 birds, yielding between 200 to 250 tons of dried chicken waste per year which is frequently applied to pastures as fertilizer. Phosphorus in the waste eventually makes its way into streams, or groundwater, through runoff.

Phosphorus not only causes algae growth and degradation of water quality, which significantly increases water treatment costs, but it leads to taste and odor problems. Although Tulsa's water meets or exceeds all federal drinking water standards, increases in taste and odor are the immediate concern of the City of Tulsa and its customers.

"We are evaluating various water treatment management options, including identification of a prime intake level at Eucha dam, to minimize the concentration of pollutants coming into the water treatment plant in northeast Tulsa. That should help tremendously with taste and odor issues," Koenig pointed out. Because Eucha drains the majority of the watershed, what generally impacts Eucha also impacts Spavinaw, the immediately adjacent downstream reservoir.

He said that the OWRB will also help Tulsa develop a plan to meet appropriate total maximum discharge load (TMDL) levels, an accepted range of pollutant concentration for the lakes. The City of Tulsa would be the first municipality in Oklahoma to implement EPA's new, controversial TMDL regulations.

The "big picture" goal of the project, according to Koenig, is extending the life, quality and capacity of the two reservoirs. Tulsa has formed a monitoring



Above: Eucha and Spavinaw Lakes and their major tributaries provide water supply to the City of Tulsa through a 55-mile-long water conveyance system.

Left: (From left) Harry Chichester, Environmental Operations Supervisor for the City of Tulsa, and Paul Koenig, of the OWRB, take flow measurements in Black Hollow Creek, a tributary of Spavinaw Creek. Coupled with various water quality analyses, flow data assist in calculating the nutrient load.

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assessment work group to develop an effective management plan, in cooperation with basin poultry producers, to absolutely minimize the amount of contaminants infiltrating the lakes.

The prospects for improved lake water quality will be enhanced through passage of the state's comprehensive poultry bill in 1998. A direct result of recommendations from Governor Keating's Animal Waste and Water Quality Task Force, the bill instituted numerous requirements, including registration and training of growers, prohibition of land application of poultry waste under certain conditions (i.e., when the ground is frozen or phosphorus-saturated, during rain events or in areas subject to severe erosion), water monitoring and soil testing by growers, and training and certification of individuals who haul and spread poultry waste. The bill also allows the Oklahoma Department of Agriculture, which is in charge of enforcing regulations, to levy a \$200-per-day penalty for noncompliance.

Also involved in the Eucha/Spavinaw study effort are the Oklahoma Department of Environmental Quality, which is conducting a septic system survey in the basin area; Conservation Commission, which is encouraging implementation of Best Management Practices in the adjoining Beaty Creek watershed as well as investigating riparian management issues; U.S. Geological Survey, through operation of three gages in the basin to assist in modeling and monitoring; and Oklahoma State University students who are modeling nutrient flow in lake tributaries along with litter and soil testing for nutrient content. The Indian Nations Council of Governments (INCOG) provides coordination and oversight for the project.

The OWRB plans to issue a final report on the study later this year.

Mark Your Calendars!

21st Annual
Governor's Water Conference
November 15, 2000

Myriad Convention Center
& Renaissance Hotel
Oklahoma City, Oklahoma

OWRB Receives GIS Award

Members of the Water Board's Information Services Section accepted an award for Special Achievement in Geographic Information Systems (GIS) at the Annual ERSI Conference, held June 26-30 in San Diego, California. Jann Hook, Mike Sughru and Kevin Koon received the award from Jack Dangermond, ESRI President.

Each year, the Special Achievement Award commemorates a select few organizations, such as the OWRB, who exemplify use of GIS technology. "I believe their work will be inspirational in leading the world into the next millennium," Dangermond said.



Jann Hook, Mike Sughru and Kevin Koon, all of the OWRB's Information Services Section, accepted the GIS Special Achievement Award from ESRI President Jack Dangermond.

Flood Warning Signs Deflect Disaster

Responding to repeated deaths and injuries caused by flooded roadways, the City of Dallas has installed a unique, state-of-the-art system that warns motorists of impending dangers. The new \$2.2 million system utilizes battery-operated signs equipped with nearby sensors. When floodwaters rise to a prescribed level, the sensors send a radio signal that activates flashing lights and signs warning "Do Not Enter - High Water." During normal periods, the signs read "High Water When Flashing." The system also sends a message that alerts city workers to street-flooding problems and it is linked with Dallas' Trinity River flood control system, providing a more comprehensive system of flood and floodplain management.

The primary impetus for installation of the system was a 1995 flooding event that resulted in the deaths of more than half a dozen citizens. Driving into floodwaters is the most frequent cause of flood-related deaths.

(*Governing*, July 2000)

Reservoir Storage

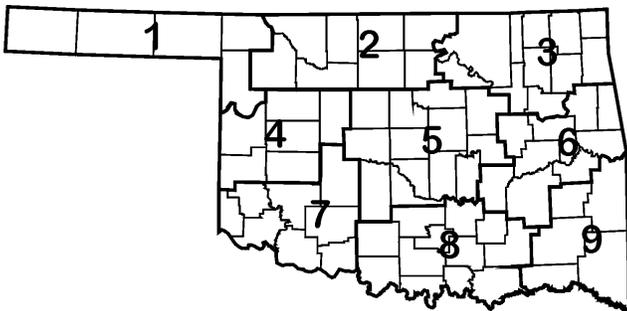
Reservoir storage levels throughout much of Oklahoma are beginning to show signs of meager rainfall and runoff. As of August 14, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 96.1 percent full, a 2.9 percent decrease over that measured on July 24, according to information from the **U.S. Army Corps of Engineers (Tulsa District)**. Twenty-nine reservoirs have experienced lake level decreases since that time. In addition, 27 reservoirs are currently operating at less than full capacity, compared to only 12 three weeks ago. Still, only two reservoirs (Lugert-Altus, only 62 percent; and Tom Steed, 79 percent) are below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs				
<i>As of August 14, 2000</i>				
Climate Division	Conservation Storage (acre-feet)	Present Storage (acre-feet)	Percent of Storage	
			Conservation	Flood
NORTH CENTRAL	933,706	928,896	99.5	0.32
NORTHEAST	3,206,195	3,037,434	94.7	2.00
WEST CENTRAL	276,790	272,940	98.6	0.00
CENTRAL	154,225	152,312	98.8	0.00
EAST CENTRAL	3,022,323	2,951,254	97.6	0.00
SOUTHWEST	301,810	232,234	76.9	0.00
SOUTH CENTRAL	2,968,244	2,876,895	96.9	0.00
SOUTHEAST	1,512,859	1,439,453	95.1	0.00
STATE TOTALS	12,376,152	11,891,418	96.1	0.56

Drought Indices

According to the latest **Palmer Drought Severity Index** (August 12, below), moisture/drought conditions in Oklahoma are beginning to worsen, especially in the dry south. The South Central climate division has deteriorated from the “mild” to “moderate drought” category. The Southeast and Southwest are in “mild drought” while the Northwest and East Central regions are experiencing “incipient drought” conditions. All nine climate divisions have undergone PDSI moisture decreases since July 22; the West Central (“near normal”) and Northwest climate divisions experienced the greatest decreases during that period.

The latest monthly **Standardized Precipitation Index** (through July, below) indicates that moderately dry conditions exist in the Southeast climate division throughout various periods extending over much of the last 2½ years. However, virtually no other regions are experiencing long-term moisture deficits, according to the SPI. The 12-month SPI time period reflects “moderately dry” conditions in the Southeast regions. No other regions experienced a dry SPI reading among the *selected* time periods. Throughout other periods over the past 72 months, only the Southeast (“moderately dry” according to the 11-, 15-, 18 and 30-month SPI’s) and South Central (“moderately dry” according to the 30-month SPI) climate divisions have experienced dry periods.



Palmer Drought Severity Index					Standardized Precipitation Index			
Climate Division (#)	Current Status 08/12/2000	Value		Change In Value	<i>Through July, 2000</i>			
		08/12	07/22		3-Month	6-Month	9-Month	12-Month
NORTHWEST (1)	INCIPIENT DROUGHT	-0.82	0.49	-1.31	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
NORTH CENTRAL (2)	UNUSUAL MOIST SPELL	2.93	4.07	-1.14	MODERATELY WET	VERY WET	VERY WET	MODERATELY WET
NORTHEAST (3)	MOIST SPELL	1.58	2.08	-0.50	VERY WET	VERY WET	VERY WET	MODERATELY WET
WEST CENTRAL (4)	NEAR NORMAL	0.24	1.58	-1.34	NEAR NORMAL	VERY WET	VERY WET	MODERATELY WET
CENTRAL (5)	NEAR NORMAL	0.04	1.07	-1.03	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
EAST CENTRAL (6)	INCIPIENT DROUGHT	-0.71	0.41	-1.12	VERY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
SOUTHWEST (7)	MILD DROUGHT	-1.30	-0.32	-0.98	NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
SOUTH CENTRAL (8)	MODERATE DROUGHT	-2.42	-1.84	-0.58	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
SOUTHEAST (9)	MILD DROUGHT	-1.92	-1.16	-0.76	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY DRY

Financial Assistance Program Update

Approved at June 13 and July 11, 2000 Board Meetings

			Financial Assistance Program Update	
			Totals as of 07/11/2000	
			<u>FAP Loans</u>	
6/13/2000	1	Rural Water District #9, Mayes County	\$1,265,000.00	#Approved 222
7/11/2000	2	Tulsa Metropolitan Utility Authority, Tulsa County	\$8,840,000.00	Amount \$326,875,000.00
			<u>CWSRF</u>	
			<u>DWSRF</u>	
			<u>Hardship Grants</u>	
			<u>Emergency Grants</u>	
			<u>REAP Grants</u>	
06/13/2000	1	Rural Sewer District #1, Rogers County	\$567,000.00	#Approved 95
6/13/2000	1	Lindsay Public Works Authority, Garvin County	\$3,195,000.00	Amount \$331,858,191.52
6/13/2000	1	Rural Water District # 11, Creek County	\$100,000.00	#Approved 9
	2	Warner Utility Authority, Muskogee County	\$45,000.00	Amount \$29,421,954.90
7/11/2000	3	City Of Tishomingo, Johnston County	\$31,358.00	#Approved 2
	4	City of Pitcher, Ottawa County	\$62,550.00	Amount \$1,038,752.30
6/13/2000	1	Town of Haworth, McCurtain County	\$150,000.00	#Approved 452
	2	Kaw City Municipal Authority, Kay County	\$60,000.00	Amount \$26,099,271.08
	3	Rural Water District #2, Dewey County	\$119,500.00	#Approved 241
	4	Roff Public Works Authority, Pontotoc County	\$78,560.00	Amount \$19,628,544.60
	5	Custer City Public Works Authority, Custer County	\$107,600.00	
	6	Rural Water District #6, Hughes County	\$119,994.00	
	7	Rural Water District #3, Muskogee County	\$91,992.00	
7/11/2000	8	Rural Water District #1, Tillman County	\$105,375.00	
	9	Ryan Utility Authority, Jefferson County	\$149,000.00	
	10	Rural Water District #1, Wagoner County	\$34,150.00	
	11	Town of Adair, Mayes County	\$150,000.00	
	12	Mooreland Public Works Authority, Woodward County	\$35,665.00	
	13	Town of Stratford, Garvin County	\$36,000.00	

OKLAHOMA Water News

Bimonthly Newsletter of the

OKLAHOMA WATER RESOURCES BOARD

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Oklahoma City, OK 73118

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SEPTEMBER-
OCTOBER 2000

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OKLAHOMA Water News

Bimonthly Newsletter of the Oklahoma Water Resources Board

From the Director



*Duane A. Smith
Executive Director*

In August, I attended a public meeting sponsored by the U.S. Fish and Wildlife Service on the proposed designation of critical habitat for the Arkansas River shiner along designated portions of the Canadian River in Oklahoma. It is the Board's position that, before proceeding with the proposed designation, more data should be collected to determine what is not only best for the shiner but for those dependent upon Canadian River water. Fortunately, the USFWS has agreed to extend the comment period to gather additional information on this very important issue which could have enormous implications on farmers, municipalities, industries and other users who withdraw water from designated portions of the Canadian River.

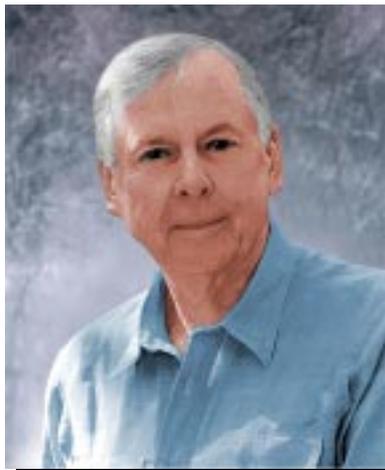
In the aftermath of the Messer-Bowers decision, the State Legislature has wisely decided to conduct a joint interim study on the waste by pollution

See Director, Page 2

T. Boone Pickens to Headline November 15 Water Conference

T. Boone Pickens, Texas oilman-turned-water-merchant, will deliver the luncheon address at the 21st Annual Governor's Water Conference when it convenes November 15 in Oklahoma City's Myriad Convention Center. The Oklahoma Water Resources Board coordinates the conference, with assistance from 30 other water-related organizations.

Pickens, who is also president and chief executive officer of Mesa Water, Inc., recently declared at an Amarillo (TX) meeting that, "Water is the new Texas gold." He compares the business of buying and selling water to dealing in mineral rights in the oil and gas industry. The Texas entrepreneur was born in Holdenville, (OK) and received his degree in geology from Oklahoma State University in 1951. He worked for Phillips Petroleum in Bartlesville for three years then, with two partners, bor-



T Boone Pickens

rowed \$2,500 to form predecessor companies to Mesa. In 1999, he formed Mesa Water, Inc. with a plan to move water from the Texas Panhandle downstate.

The Conference, entitled "Oklahoma Water: Shaping the Future," will focus on vital water and environmental topics, including the Kiamichi River Basin Plan, water marketing potential, weather modification, endangered species, the direction of water development, water quality and waste by pollution issues.

According to Duane A. Smith, executive director of the OWRB, the agenda will also feature remarks by Gov. Frank Keating (invited), Dr. Kelvin Droegemeier, director of the OU Center for Analysis and Prediction of Storms; William H. Satterfield, Alabama attorney specializing in endan-

See Water Conference, Page 3

issue. In August, I met with Governor Keating and State Secretary of Environment Brian Griffin, who both fully support that approach as well as contracting with an independent hearing examiner, former Oklahoma Supreme Court Judge Roy Barnes, who is uniquely qualified to conduct the Kronseder remand hearing as directed under the recent Supreme Court ruling.

The first meeting of the Joint Special Committee on Waste by Pollution, Co-Chaired by Representative M.C. Leist and Senator Kevin Easley, was held on September 13 at the State Capitol House Chamber. Various state environmental agencies presented their views on the issue, including summaries of their individual water quality monitoring responsibilities. The U.S. Geological Survey also provided an overview of their activities and findings of a recent study of the Ogallala (High Plains) Aquifer which revealed that nitrates, phosphates and other pollutants are reaching groundwater in the region much quicker than previously thought. The Committee, requested by Senator Bruce Price, was very receptive to the information presented to them and the members appear committed to identifying appropriate solutions with minimal impact.

Following the September Board meeting, the OWRB Rules Committee met to discuss rule changes that would facilitate the agency's compliance with the Supreme Court decision. They considered the potential for establishing protective measures through the Water Quality Standards but, for the short-term, decided to revise the Water Protection Plan required of all water rights applicants. This more immediate course of action, which can generally be accomplished without formal rulemaking, will provide the agency with more complete information concerning the potential for waste through groundwater use. The revised Plan and other proposed rule changes are available for review and public

comment. In the meantime, I have instructed our permitting staff to begin setting hearing dates for non-swine applications.

By now, virtually all Oklahomans have been impacted in one way or another by the ongoing drought. At the September Board meeting, Ken Crawford, Director of the Oklahoma Climatological Survey, was kind enough to update Board members and others present on the current drought situation. Demonstrating the impressive suite of monitoring tools offered by the OCS, including near real-time data derived from the Mesonet's new soil moisture sensors, Dr. Crawford informed the Board that existing climate data and weather forecasts indicate that it could be some time before Oklahoma recovers from this extended drought episode.

Just last week, we received word that Governor Keating has signed the interlocutory agreement with the Corps of Engineers that will free up 500 acre-feet of Sardis water supply and, more importantly, clear the way for construction of Phase I of the Sardis Lake Water Authority. The agreement was approved at the August 9 Water Board meeting. In cooperation with the Governor's Office and Choctaw and Chickasaw Nations, we have also developed a general workplan and timeline for establishment of a State/Tribal water use compact and review of proposals to develop the water resources and economy of southeast Oklahoma.

Finally, as you many of you know, former long-time Water Board member Mike Henson passed away in late August due to complications from leukemia treatment. Several OWRB staff attended her uplifting memorial service in Stillwater. Most of us fortunate enough to know Mike are well acquainted with her kind nature and unique insight into the many complex issues she wrestled with as both Board Member and Stillwater Mayor. The Water Board and staff bid farewell to a great colleague and friend.

Standards Revision Underway

The OWRB's Water Quality Division is currently conducting its triennial review and revision of Oklahoma's Water Quality Standards. To solicit public input on proposed changes, the OWRB is hosting a series of public meetings at the Board's Oklahoma City office at 3800 North Classen Blvd. Initial public meetings on the Standards document were held September 8 and October 13; a third meeting is scheduled for November 3. The rulemaking hearing for formal public comment will be held February 5, 2001.

Specific topics for the meetings are available on the Standards Revision page of the OWRB's website. To facilitate incorporation of suggested comments and changes, the OWRB will also provide on the site justification documents on specific topics of discussion following each meeting. Those documents and other pertinent information on the Water Board's Standards Revision process may also be obtained by calling 405-530-8800.

The Federal Clean Water Act requires a comprehensive review and, if necessary, a revision of Oklahoma's Water Quality Standards every three years.

OWRB Staff Address Rural Water Association Conference

Several Water Board employees lent their expertise on a variety of subjects at the Oklahoma Rural Water Association's fall conference, held September 21-22 at Fountainhead Lodge.

Joe Freeman, Financial Assistance Division Chief, addressed the general session with a discussion of the OWRB's financing programs and general agency responsibilities. Nathan Kuhnert, of the Planning and Management Division, provided conferees with a summary of activities related to the ongoing Rural Water Systems Update. Hosting various technical sessions on water/wastewater funding sources and procedures, along with Freeman, were Nate Ellis, Angela Thompson and Harold Springer. Shelly Bacon also provided training during the break-out sessions.

The conference was attended by approximately 350 representatives and associates of Oklahoma's rural water systems.



Nathan Kuhnert



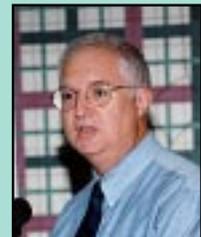
Joe Freeman



Angela Thompson



Nate Ellis



Harold Springer

Water Conference . . . Continued

gered species issues; Gregg Cooke, Administrator of Region 6 of the Environmental Protection Agency; Oklahoma City Mayor Kirk Humphreys; Oklahoma Secretary of Environment, Brian C. Griffin; Ted Coombes, Chairman, ODOT Waterways Advisory Board; Congressman Wes Watkins and key members of the Oklahoma Legislature.

Recipients of 2001 Rural Economic Action Plan (REAP) grants for sewer and water projects will also be announced at the Conference. Participating legislators and various officials of Oklahoma's cities, towns and rural water districts will be recognized. The Financial Assistance Division of the OWRB will conduct a workshop in conjunction with the conference to coach community officials in the rules and procedures of the Rural Economic Action Plan (REAP) grant program. REAP is an initiative of the 1996 Oklahoma Legislature to assist small communities and rural areas in improving water and wastewater infrastructure as a means of stimulating economic development.

Presentation of Oklahoma Water Pioneer awards will close the luncheon agenda and the 21st Governor's Water Conference. The awards recognize the lifetime achievements of outstanding Oklahomans in the planning, de-

velopment, conservation and protection of the state's water resources.

Registration begins at 8 a.m. with opening remarks by OWRB Chairman Lonnie Farmer at 8:30. For more information, please call the Oklahoma Water Resources Board at 405-530-8800.

Conference parking is available for \$5 below the Myriad in the underground parking garage, accessible from Robinson Avenue (Ronald Norick Blvd.) on the west or E.K. Gaylord Ave. on the east.

For advance registration, please complete the Conference registration form in this issue and mail, along with your \$40 check, money order or purchase order, to the Oklahoma Water Resources Board, 3800 N. Classen, Oklahoma City 73118. Please make checks payable to the "Oklahoma Water Resources Board."

To make room reservations at the Renaissance Hotel, which adjoins the Myriad Convention Center, please call 1-800-859-6877. To be eligible for the special room rate of \$99, single or double, call the reservation line before November 1 and mention the Governor's Water Conference.

Weather Experts Say Drought Likely to Persist

Not only has the ongoing drought in Oklahoma caused countless hardships for farmers, ranchers, cities, rural water systems, industries and virtually every citizen in the state, relief may be many months down the road, according to the State Climatologist.

“We’re a long way from ending this drought,” Ken Crawford, director of the Oklahoma Climatological Survey, told members of the Oklahoma Water Resources Board at their September meeting, following the driest August on record in the state since record-keeping began in 1892.

Since Crawford’s appearance before the Board, Oklahomans have witnessed the driest August through September period in state history. From September 1 through October 10, five climate divisions received 20 percent or less of their normal precipitation, including the West Central region at a paltry one percent, or three one-hundredths of an inch. The state-averaged total was only 26 percent of normal for the period. At some point during the July/August/September period, most of the state’s Mesonet stations experienced a rainless streak of more than two months (less than one-tenth of an inch during any one day period). Some areas experienced 80 to 90 consecutive days with no significant rainfall.

August was also extremely hot. The statewide mean temperature of 85.4 degrees Fahrenheit was the fifth warmest on record and all areas of the state were well above normal for the month, Crawford said. And in October, 106 degrees was recorded at Hollis, the warmest reading ever in Oklahoma in October.

Lack of moisture, heat and Oklahoma’s typical southern winds all combined for a potentially disastrous fire situation. Hundreds of wildfires erupted throughout the state and more than 80,000 acres have been burned to date. The state has lost more than \$22 million in timber resources and the fire danger still exists.

While extended forecasts predict a possibility of above normal rainfall during the November through January period, Crawford emphasized that even a short period of above normal rainfall, as we experienced in October, would have little or no effect on this current drought. “We may go into this winter with a drought even if we get some rain,” he said, estimating that a full month of gentle rains is needed to replenish Oklahoma’s parched soil. He added that a dry spring could be devastating to the state’s economy and Oklahomans in general.

The Oklahoma Climatological Survey administers the Oklahoma Mesonet, one the most concentrated and sophisticated weather reporting networks in the world. The Mesonet, a joint project between the University of Oklahoma and Oklahoma State University, became fully

operational in 1994 and consists of more than 110 environmental monitoring stations in all of the state’s 77 counties. Each station measures a multitude of conditions, including rainfall, air temperature, humidity, air pressure, wind speed and direction, solar radiation and soil temperature. Measurements are recorded at five-minute intervals and are updated every 15 minutes on the OCS website at www.ocs.ou.edu.

The most recent addition to the network are sensors at 100 Mesonet sites which measure soil moisture content at four separate depths: five centimeters (two inches), 25 centimeters (almost 10 inches), 60 centimeters (nearly two feet) and 75 centimeters (about two-and-one-half feet below ground). In September, Crawford said that soil moisture supplies were critically short throughout much of the state, as many farmers awaited sufficient

moisture to plant winter wheat for forage. Fortunately, some of that moisture did arrive during October. However, state officials have already forecasted potential agricultural losses of up to \$1 billion.

According to the Palmer Drought Severity Index, a general indicator of current drought conditions issued each week by the National Oceanic and Atmospheric Administration’s Climate Prediction Center, all nine climate divisions in Oklahoma are now in various stages of drought, including the Northwest and South Central regions which are categorized in severe drought. Crawford also points to the Keetch-Byram Drought Index as one of the best and most accurate indicators of drought conditions in Oklahoma. A vital component of the Oklahoma Fire Danger Model, the index measures the state of near-surface soil moisture (within the uppermost eight inches of soil) as well as the amount of fuel available for fires. Prior to the October rains, almost two-thirds of the Mesonet stations in Oklahoma recorded KBDI values above 600, the general threshold of severe drought. The Fire Danger Model was developed by Oklahoma State University in conjunction with the Intermountain Fire Sciences Lab of the U.S. Forest Service in Missoula, Montana and is run operationally by the University of Oklahoma and the Oklahoma Climatological Survey using Mesonet data.

Also of concern to state climate and water officials are streamflows. “To me, the first real indicator of the extreme nature of this drought were the significant number of U.S. Geological Survey streamflow stations reporting little or no flow,” said Duane Smith, OWRB Executive Director.

While water supply storage in the state’s major reservoirs has not reached the critical phase, a number of

“We may go into this winter with a drought even if we get some rain”

major lakes fell below 80 percent capacity, including Lugert-Altus Reservoir at about 31 percent of normal storage in mid-October. Lugert-Altus is utilized primarily for irrigation by customers in southwest Oklahoma.

Fortunately, though levels have dropped steadily in recent months, the state's large surface supplies generally contain ample water to satisfy the near long-term requirements of many Oklahomans. Some smaller municipal lakes, however, have been stretched to their limits, although the recent cool weather has reduced water demands throughout much of the state and provides an opportunity for recovery with fall rains.

The City of Wilburton, in eastern Oklahoma, is all too familiar with such water woes. In August, Governor Keating signed a declaration of disaster emergency due to the critically low level of Lloyd Church Lake. The lake provides raw water supply to some 1,200 residences or businesses in Wilburton and an additional 1,300 to 1,400 customers of Latimer County Rural Water District No. 1. The disaster declaration provided Wilburton with eligibility for a \$100,000 emergency grant through the OWRB's Financial Assistance Program. The grant will be combined with \$100,000 from a local petroleum company and local funds to construct a new six-inch line that will divert additional supply from Fourche Maline Creek some 2½ miles away. The project is estimated at \$236,000.

"The Water Board funds were enabled through a recent change in eligibility requirements that award additional priority points to water systems and rural water districts in designated state or federal disaster areas," said Joe Freeman, chief of the OWRB's Financial Assistance Division. He added that a similar OWRB grant was recently awarded to the Town of Boynton, southwest of Muskogee, to improve its crippled water delivery system.

Generally slower to respond to drought events are groundwater levels, monitored by the OWRB through its annual water well measurement network of more than 700 wells throughout the state. According to OWRB Planning and Development Division Chief Mike Mathis, network data, when compared to historical records, are extremely valuable in determining long-term trends as well as in keeping abreast of localized groundwater supply problems as they occur.

"While deeper wells, in general, will be slow to provide us with information on the extent of this current drought, recent data from many of those wells indicate that levels have already declined due to the extended dry periods in 1998 and, earlier, in 1996," Mathis pointed out.

Crawford agrees that the ongoing drought could, in fact, be a continuation of an extended drought begin-

ning two to four years ago. "Our data indicates that some areas of southern Oklahoma have failed to recover from the 1996 drought. That just intensifies the current situation," he said.

An interim study recently convened by the State Legislature is seeking various short- and long-term measures to deal with Oklahoma's extensive agricultural-related losses, including those related to livestock hay shortages and the substantial resources expended to fight



This dry depression in northern Woodward County is normally a relatively large farm pond.

recent wildfires. The committee, co-chaired by Reps. M.C. Leist and James Covey and Sens. Frank Shurden and Robert Kerr, is specifically studying the feasibility of creating an emergency contingency fund to alleviate costs associated with current and future agricultural-related disasters.

The Oklahoma Drought Management Plan, published in 1997 in response to the previous year's disastrous drought, is the primary mechanism through which state agencies attempt to mitigate and prepare for drought situations in Oklahoma. Albert Ashwood, Director of the Oklahoma Department of Civil Emergency Management and State Drought Coordinator of the Oklahoma Drought Management Team, believes that the state's preparation for this drought has been relatively efficient, to date.

"Considering that drought is a unique natural disaster in that its onset is so gradual and its impacts so widespread, the state has done an admirable job from a readiness and response perspective," he said, adding that Gov. Keating has been extremely supportive of state drought mitigation efforts throughout his term. The Governor created the Drought Team, consisting of the Water Availability and Outlook Committee (WAOC) and Impact Assessment and Response Committee (IARC), through executive order in 1996.

As the state's water management agency and chair of the WAOC, the Water Board is responsible for monitoring emerging drought conditions. According to Duane Smith, this role necessitates a close working relationship with numerous state and federal agencies and organizations.

"We are blessed to have so many responsible environmental agencies in Oklahoma and we depend on them for a variety of drought-related information," he said, citing OCS, State Department of Agriculture (also chair of the IARC), U.S. Geological Survey, Corps of Engineers, Bureau of Reclamation and various others who support state monitoring efforts.

As chair of the WAOC, the Water Board publishes the Oklahoma Water Resources Bulletin, an accounting of various water and moisture-related conditions in Oklahoma. The Bulletin, available through the agency's website

(www.owrb.state.ok/~owrb), is released on a regular basis throughout the year and as frequently as weekly when dry conditions warrant.

Smith points out that due to the "creeping" nature of drought's onset, dealing with drought episodes must necessarily be a day-to-day pursuit of all state and federal water agencies in Oklahoma.

"At the Water Board, we try to short-circuit drought impacts to the best of our ability. Through our hydrologic studies, we obtain an accurate reckoning of available water that facilitates good management of the resource. In general, we administer water rights to allay or prevent water shortages, or at least buy ourselves time to develop a management strategy to deal with those situations when and where they arise. The Drought Team takes a similar approach in being proactive to drought events," he added.

Given the apparent long-term nature of this drought situation, Smith hopes that water users across Oklahoma will work together to iron out disputes over dwindling water availability. "I really want to encourage upstream permit holders to work with their neighbors downstream to resolve and, if possible, prevent conflicts over limited supply. All users should try to do the neighborly thing," he said.

Virtually every summer, water systems in Oklahoma break down or at least become stressed due to the onset of seasonably dry conditions. In many of these cases, Smith points out that infrastructure is the prob-

lem, not drought.

"The Water Board's Financial Assistance Program has been an extremely effective mitigator of drought by strengthening the ability of municipal and rural water systems to withstand potential water emergencies. Through the program, we identify water systems suffering from drought-related supply problems and provide loans and grants for upgrades that ensure their ability to

serve customers even during moderate to severe drought episodes. These improvements also give them greater independence," Smith said.

The OWRB also administers funds awarded to Oklahoma through the Bureau of Reclamation for temporary drought assistance, when available. Smith said that construction is imminent on two separate cooperative projects to provide water supply for livestock and rural fire protection in southern Oklahoma. A project in Cotton County will involve the construction



The depleted Cimarron River in mid-September, as viewed from Highway 81 north of Kingfisher.

of three water wells in the alluvium of Cache Creek, all with public access for area ranchers and firefighters. A similar project in Tillman County will extend water lines from the City of Davidson to thirsty cattle operations west of town.

Smith added that the OWRB and Oklahoma Weather Modification Advisory Board continue to seek opportunities, through the state's contractor, Weather Modification, Inc., for rainfall enhancement. Although chances for cloud seeding in the state have been limited recently, storm systems that moved through Oklahoma in mid/late-October provided several working opportunities. "During two consecutive weekends this month, WMI conducted about a dozen seeding missions and we were fortunate to receive abundant precipitation throughout much of Oklahoma," Smith pointed out. "Of course, I'm sure we'll require more rainfall down the road." The program will cease operations at the end of October.

"The OWRB and members of the State Drought Management Team are committed to improving the way in which Oklahoma handles drought episodes and we plan to work with the Governor and Legislature in developing important initiatives to maximize our drought response and preparedness," Smith emphasized.

"On the other hand, we're certainly not adverse to a little help from Mother Nature. As we prepare for drought, we'll continue to pray for rain."

State, Feds Coordinate Funding Efforts

Following a year-long effort, a state and federal working group has simplified the process required for Oklahoma communities and rural water districts to obtain funds for water and wastewater projects.

The Funding Agency Coordinating Team (FACT), consisting of representatives of various state/federal funding agencies, was created in early 1999 to troubleshoot the existing, and often confusing, engineering and environmental requirements associated with funding water and wastewater projects. Earlier this year, the Team presented the results of their effort — a uniform set of guidelines and checklists for communities and rural water and sewer districts to obtain state and federal funds.

In the past, each funding agency had specific requirements for preparing engineering reports and environmental information documents. When Oklahoma communities and rural water/sewer districts petitioned funds from more than one agency, they were required to pay separately for the engineering report and/or environmental information document meeting each agency's requirements. This proved to be not only a financial burden, but cause unnecessary delays as well.

State and federal lending agencies are now, literally, on the same page, according to Reese Daugherty, an engineering manager with the OWRB's Financial Assistance Division.

"Not only did we coordinate state agency requirements, we were able to bring together state and federal activities," he pointed out. "This standardized system, in conjunction with the availability of forms, instructions and fact sheets on the Internet sites of the relevant agencies, greatly accelerates the funding process for the applicant. Fewer mistakes and less headaches for communities seeking funds for critically important water and wastewater projects — from our viewpoint, that's where the rubber meets the road."

The FACT group consists of civil and environmental engineers from the OWRB and other state and federal lending agencies, including the Oklahoma Department of Environmental Quality, Department of Commerce, Rural Development and the Okla-

Field Office Staff Recognized

At the OWRB's August staff meeting, the agency's field office personnel were honored for their outstanding service. According to Executive Director Duane A. Smith, these versatile employees are required to have knowledge of all OWRB programs and must frequently "go the extra mile" (literally) to serve Oklahomans. The OWRB's six field office employees (pictured from left to right) are Hank Elling, Lawton; Gavin Brady, Tulsa; Kim Sullivan, Lawton; Jason Shiever and Cathy Poage, Woodward and Kent Wilkins, McAlester;



homa City Area Indian Health Services.

Daugherty is a member of the Engineering Committee, one of two FACT working groups. John Day and Jennifer Halstead, also of the Water Board's Financial Assistance Division, served on the FACT Environmental Information Document Committee.

"Initially, we established two goals to ease the funding process for the awarded communities as well as the engineering and environmental firms who represent them," Daugherty pointed out. "The first was to develop a common procedure for processing engineering and environmental information documents. The second was to develop common guides and checklists for use by all state and federal funding agencies."

The Committees completed their work, including an extensive review and comment period, last April. Their final product includes engineering and environmental reporting guidelines and checklists for state-funded water and wastewater projects. They also prepared sample documents to provide basic information for the selection of engineering and environmental consultants.

Although their work is complete, Daugherty points out that occasional revisions by the working groups will be necessary. "We will continue to monitor and review the documents to ensure that they remain accurate and up-to-date. So far, only a few minor revisions have been required."

Forms and related documents are available through the Form Center on the Water Board's website at <http://www.state.ok.us/~owrb>. Also posted on the Form Center are the OWRB's water and wastewater loan and grant application forms as well as fact sheets about the agency's various financial assistance programs.

Financial Assistance Program Update

Approved at August 5 and September 12, 2000 Board Meetings

			Financial Assistance Program Update	
8/5/2000	1	FAP Loans Moore Public Works Authority, Cleveland County	\$2,225,000.00	
8/5/2000	1	CWSRF Loans El Reno Municipal Authority, Canadian County	\$526,800.00	
	1	Jay Utilities Authority, Delaware County	\$3,200,000.00	
		DWSRF Loans None		
		Hardship Grants None		
8/5/2000	1	Emergency Grants Town of Geronimo, Comanche County	\$56,000.00	
	2	Achille Public Schools, Bryan County	\$74,987.00	
9/12/000	3	Farris School District 23, Atoka County	\$25,500.00	
	4	Wilburton Public Works Authority, Latimer County	\$75,000.00	
		REAP Grants None		
			Totals as of 9/12/2000	
			FAP Loans	
			#Approved	223
			Amount	\$329,085,000.00
			CWSRF	
			#Approved	97
			Amount	\$336,044,991.52
			DWSRF	
			#Approved	9
			Amount	\$29,421,954.90
			Hardship Grants	
			#Approved	2
			Amount	\$1,038,752.30
			Emergency Grants	
			#Approved	456
			Amount	\$26,330,758.58
			REAP Grants	
			#Approved	241
			Amount	\$19,628,544.60



Bimonthly Newsletter of the

OKLAHOMA WATER RESOURCES BOARD

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Oklahoma City, OK 73118
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NOVEMBER-
DECEMBER 2000

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OKLAHOMA Water News

Bimonthly Newsletter of the Oklahoma Water Resources Board

From the Director



*Duane A. Smith
Executive Director*

On November 14, the Water Board and Choctaw/Chickasaw Tribes co-hosted the Joint State/Tribal Request for Qualifications (RFQ) Pre-Submittal Workshop at our Oklahoma City office. The RFQ process is the first relevant task to be addressed under HCR 1109, which directs the OWRB and Choctaw/Chickasaw Tribes to evaluate all feasible proposals for the potential development of southeast Oklahoma waters. Information collected through submitted RFQ's will assist the OWRB and Tribes in determining the ability of potential applicants to finance and participate in the Southeast Oklahoma Water Resources Development Plan.

The scope of this exciting and diverse project was evidenced by the approximately 40 workshop attendees representing interests in the Sardis Lake and southeast Oklahoma area, Oklahoma City and metropolitan area, Texas municipalities, and various engineering and private firms. Revenue

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State Cloud Seeders Break for Winter

As parched soils and withered crops gave way to saturated grounds and rising rivers, the Oklahoma Weather Modification Program's 2000 project season officially concluded October 31. According to Sen. Robert S. Kerr,

president of the Oklahoma Weather Modification Board, 156 total seeding flights — 86 for hail suppression and 70 for rainfall enhancement — were conducted this year. Included in those operations were 20 flights performed along the Oklahoma border in the States of Kansas and Texas, consistent with agreements effectuated with those two states early in 2000.

"Following the driest August through September period in the state's history, we really leaned on our pilots and meteorologists to take advantage of every possible cloud seeding opportunity," Kerr pointed out. "Operations really picked up in October and I think we really had an impact on breaking the back of the extended drought which plagued many of our farmers, ranchers and citizens." He added that the program will resume in March 2001.

The Weather Modification Advisory Board was created in 1999 to oversee the program and coordinate a mechanism that provides long-term program funding through voluntary assessments provided by state property/casualty insurance companies. The cooperative state/private insurance cost-share effort, emphasizing hail

See Cloud Seeders, Page 2



Tim Sedlock, Project Meteorologist for the Oklahoma Weather Modification Program, adjusts burn-in-place flares on one of two aircraft stationed at Oklahoma City's Wiley Post Airport.

Director . . . Continued

ultimately generated through the final selected proposal(s) will provide for repayment of construction costs for Sardis Reservoir to the Corps of Engineers, assist in establishment of a crucial regional water supply system in the Sardis area and fulfill various other economic development objectives in southeast Oklahoma, including the area encompassed by the Choctaw and Chickasaw Nations.

On a very related note, history was made November 27 as we held the first State/Tribal Water Compact Negotiations meeting at the State Capitol. The State Negotiating Team – fronted by Howard Barnett, the Governor’s economic development advisor — and the Tribal Negotiating Team, including Choctaw Chief Greg Pyle, Assistant Chief Mike Bailey and prominent Hugo attorney Bob Rabon, agreed that the compact must address at least three vital issues: (1) water rights administration, including the management of existing rights and the handling of new permit applications; (2) water quality standards administration; and (3) development of water resources in southeast Oklahoma, including expansion of economic development opportunities in the region.

The second meeting of the Joint Special Committee on waste by pollution, called by Representative M.C. Leist and Senator Bruce Price, was held December 12. After consideration of a number of options — ranging from statutory changes to additional requests for funding and resources — that would facilitate our compliance with the Supreme Court’s decision, the Board recommended to the Committee development of a memorandum of agreement that realigns workloads between the OWRB and Oklahoma Department of Agriculture. The MOA approach conforms to

Cloud Seeders . . . Continued

suppression benefits, is expected to provide as much as \$3 million per year for expansion of the program to at least seven aircraft and three project radars. The current program employs three aircraft and two radars. The state has contracted with North Dakota’s Weather Modification, Inc., to conduct program operations since 1996.

“Expansion of the program is imperative if we want to provide adequate statewide coverage,” according to Duane Smith, Executive Director of the Oklahoma Water Resources Board, the agency that coordinates the program. “During major outbreaks of storms, it is virtually impossible for three planes to reach all of the prime seeding areas,” he adds. Smith is also Chairman of the Oklahoma Weather Modification Advisory Board.

This year, the Advisory Board also investigated the potential implementation of a long-term research program, conducted hand-in-hand with Oklahoma’s ongoing operational cloud seeding activities, to scientifically estimate the specific impacts of weather modification, especially its potential in reducing millions of dollars in annual crop and property damage due to large hail

existing environmental statutes, removes potential duplication of effort among agencies and maximizes efficiency. We eagerly await the Joint Committee’s decision on this very important matter.

Those who were fortunate to attend the 21st Annual Governor’s Water Conference, held November 15, witnessed perhaps our most thought-provoking and successful Conference ever. OWRB staff, especially Mike Melton and the recently “retired” Mary Whitlow, and the more than 30 sponsoring organizations put together an outstanding program while the Renaissance Hotel and Myriad Convention Center provided excellent facilities for our 300 guests. Entrepreneur T. Boone Pickens highlighted the event with a luncheon discussion of his efforts to market Texas Panhandle groundwater for use in Texas urban areas, such as San Antonio and Dallas. Various other experts also updated conferees on ever-changing, and often controversial, water and environmental issues, including tasks associated with formulation of the Southeast Oklahoma Water Resources Development Plan and creation of a State/Tribal Water Compact; potential impacts of the Supreme Court’s waste by pollution decision; recent exciting developments in weather modification technology and research; how the Endangered Species Act has and will impact water resource-related projects; how the states and federal government are wrestling with determining and setting total maximum discharge loads (TMDL’s) for the nation’s rivers and streams; and issues facing the future of navigation in Oklahoma and elsewhere. As always, the buzz created by our array of interesting speakers will dominate discussions between water resource professionals in Oklahoma for months to come. I urge everyone to clear their November 2001 calendars for next year’s Water Conference.

events. Future research plans under consideration revolve around a proposal submitted by the National Center for Atmospheric Research (NCAR) and Center for Analysis and Prediction of Storms (CAPS). The proposal includes collaboration with the Oklahoma Weather Center, housed at the University of Oklahoma.

“The Weather Center is home to a unique collection of atmospheric scientists and the most sophisticated network of weather monitoring tools in the world,” Smith said. “I think we would be remiss to conduct research of this nature without utilizing their unique and extensive expertise that could not only verify the impact of our cloud seeding program, but actually identify measures to improve its effectiveness both in Oklahoma and around the world.”

Smith said that the Advisory Board is investigating several funding alternatives for the potential five-year research project, including federal weather research programs, state appropriation(s) and/or non-profit state foundations. “We’re very excited about the opportunity to demonstrate and document weather modification’s potential as both a feasible and effective water resources management tool,” he emphasized.

Well Plugging Demonstrated

On August 18, near Gerty, Hughes County residents and other interested citizens were afforded a unique opportunity to witness professionals decommissioning a water well. The demonstration was sponsored by the OWRB, Hughes County Rural Water District #6, OSU Cooperative Extension Service and Oklahoma Department of Environmental Quality. The work was supervised by Clifford Tatum, of Hughes RWD #6, and Kent Wilkins, of the OWRB's McAlester Field Office.

Plugging of unused or abandoned wells is crucial because they can provide a direct conduit for contaminants to reach the state's groundwater supplies. Old wells with deteriorated casings make it possible for pesticides, fertilizers or anything applied in the general area of a well to reach groundwater. Insecurely capped wells of any age are also a public safety hazard.

In Gerty, the depth of the well was measured using a weighted cord. If the well included a pump, it would have been removed. Next, clean silica sand was shoveled in to a depth of 16 feet below the surface. Enough bentonite chips to fill 2 feet on the well were added and hydrated through addition of sufficient water. The bentonite swells to form an efficient barrier against surface water. A concrete mixture was then poured down the casing to bring the level up to 4 feet below the surface. The casing was removed at that level, then clean soil was placed on top of the wet concrete and

the hole was filled in.

For complete information on how to properly decommission a water well, contact a licensed well driller or the Oklahoma Water Resources Board.



Plugging of unused or abandoned wells is crucial . . .



Bureau Names Area Manager

Larry Walkoviak, a native Oklahoman, has been appointed manager of the Bureau of Reclamation's Oklahoma-Texas Area Office in Austin, Texas. Walkoviak will be responsible for managing Reclamation programs and projects in Oklahoma (through the Bureau's field office in Oklahoma City) and the portion of Texas east of the

Pecos River, as well as the Wichita Project in Kansas.

Walkoviak was born in Shawnee and raised on a dairy farm in east Texas. He graduated with a bachelor's degree in agricultural engineering in 1974 from Texas A&M prior to starting a career with the Bureau of Reclamation in January 1975. Walkoviak replaces Elizabeth Harrison, who has been named Deputy Director, Office of Policy, in Denver, Colorado.



Morris Named Employee of the Quarter

Ken Morris (left), of the OWRB's Planning and Management Division, received the Employee of the Quarter award at the agency's October staff meeting. As State National Flood Insurance Program (NFIP) Coordinator, Morris has instigated countless outstanding accomplishments related to the promotion of sound floodplain management in the 363 NFIP member communities in Oklahoma. In addition to providing numerous technical assistance and training opportunities for the state's floodplain administrators, Morris spearheaded development of the Oklahoma Floodplain Managers Association and the organization's certification program, the first nationally accredited program of its type in the U.S. He also promoted passage of legislation that established a state-funded flood hazard mitigation program in 1999.



Improved Training Required to Assist Local Floodplain Officials

by W. Kenneth Morris, CFM,
State NFIP Coordinator, OWRB

There is nothing quite like a flood to demonstrate that many local floodplain administrators are not familiar enough with their ordinances, requirements of the National Flood Insurance Program (NFIP) or disaster relief to provide timely response during crisis and recovery periods. Unless they are adequately trained, they or their superiors (usually elected officials) often believe the state and/or Federal Emergency Management Agency (FEMA) will come in and save the day with little responsibility on the part of the local government.

A case in point is the flash flooding which ravaged several southwest Oklahoma communities in October. As the waters were receding, I found myself in one of those communities, briefing the mayor of the Town of Apache (an insurance agent), Caddo County commissioners and other impacted local officials. They were shocked when I explained that their residents should not proceed with any flood repairs or move back into their homes until damage reports were completed. Unfortunately, this flood caught them largely unaware of the requirements and responsibilities they vowed to uphold. Still, after several intense meetings and discussions, I tip my hat to the local Caddo County and Apache officials for efficiently enforcing their NFIP ordinance, both before and after the floods which devastated the area.

Well-trained floodplain officials are intimately familiar with local ordinances, substantial damage provisions, specifics concerning Increased Cost of Compliance coverage, how state or federal aid is intertwined with flood insurance and the importance of annual local floodplain management workshops. The time for training is before the flood. Bringing the public and local officials up to speed on pertinent floodplain management and disaster regulations on the heels of a flooding event is tough — tough on emergency management, tough on elected officials, tough on citizens and tough on the NFIP. The best way to break the cycle of repeated flooding is through enforcement of substantial damage provisions, something many floodplain administrators know little about.

Training is the key. While Oklahoma has 363 communities enrolled in the NFIP, only 80 local floodplain officials are certified to manage those individual programs. Floodplain management is a full-time job, definitely not a responsibility assigned as an afterthought to an untrained city/town official or employee.

The Association of State Floodplain Managers, Oklahoma Floodplain Managers Association, and other organizations offer voluntary certification programs, including testing requirements concerning the many, varied aspects of floodplain management. These certification programs are critical to the success of local floodplain management. They must be supported and fostered.

But more should be done. Training requirements for local staff would ensure more effective administration of local ordinances and FEMA should consider certification of the local floodplain administrator as a prerequisite to community participation in the NFIP. All local floodplain administrators, including certified ones, should attend periodic training on the NFIP and related elements of emergency management and assistance, particularly the constantly changing federal requirements described in Title 44 of the Code of Federal Regulations. The OFMA and ASFPM have continuing education requirements for their voluntary certification programs. A combination of further incentives and requirements — again, perhaps in conjunction with NFIP participation — should be explored so that local administrators, once trained and/or certified, remain up to speed on the latest floodplain management techniques and regulations. We should explore the potential integration of floodplain management curriculum at the university level and, on a related note, the ASFPM has held preliminary discussions with the Emergency Management Institute about developing an “Introduction to Floodplain Management” course and identifying other partners for such an effort.

In summary, in Oklahoma and elsewhere, we desperately need a comprehensive program for training, educating and certifying floodplain managers, both at the state and local levels and as an option for college students who are interested in the field. To be effective, these training and educational opportunities must be interwoven with appropriate incentives and requirements that will ensure that the right people have the right tools to deal with flooding events.

October Floods Devastate Central, Southern Oklahoma Communities

(Thanks to the Associated Press, Apache News and Federal Emergency Management Agency for portions of the following story.)

Early Sunday morning, October 22, one of the worst floods ever to hit Apache, Oklahoma, southwest of Oklahoma City, destroyed numerous homes, washed out highways and roads, displaced dozens of families and prompted several citizens to seek the shelter of a sturdy tree in their effort to escape the wrath of rapidly rising floodwaters.

Prayers for relief from Oklahoma's severe drought situation turned to curses as thunderstorms dumped up to 15 inches of rain on some areas of already soggy south-



Flooding in the Josseyville housing addition, south of Apache, as the floodwaters were receding during the morning of October 24.

ern Oklahoma. Fifty homes in Apache were destroyed, along with 20 in nearby Anadarko. At least 200 residents were evacuated and the damage was enough to drive some victims away permanently.

"My parents can't afford flood insurance. They live on a fixed income," Debra Love said. "This is our third flood, and our last. We're leaving."

As many as 60 roads and bridges were damaged in the Anadarko area after 16 inches of rain fell in six days. Floodwaters rose as high as seven feet in some houses before receding.

In Carter County, about 80 miles southeast, swollen creeks flooded highways with up to three feet of water and carried away cars. "People just don't listen. You tell them not to drive through the damn water, and what do they do? They drive through the damn water," said Ed Reed, the county's emergency manager. Almost one-half of flood-related deaths occur in vehicles, primarily when people drive into flooded

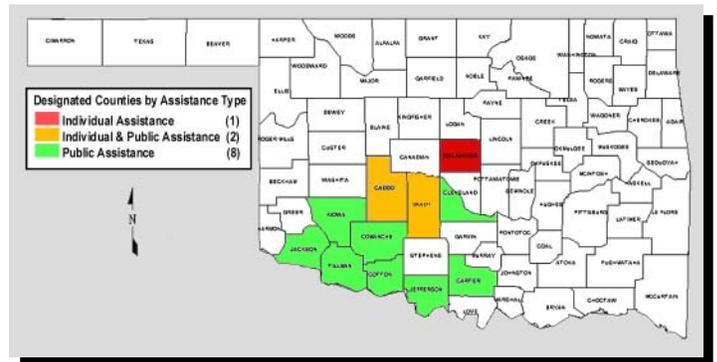
highway dips or low-drainage areas at night.

Ardmore, the Carter County seat, received 3.2 inches of rain on Thursday, October 26 after averaging more than one inch per day for the previous week. Highways in Carter, Jefferson and Stephens counties were temporarily closed due to the high waters. Near Chickasha, hit hard by the Sunday/Monday storms, a water main broke, seriously jeopardizing the city's water service. The National Guard and state emergency management officials tanked in water as a precaution, and schools and factories closed to help ease the water load. Chickasha received an estimated \$1 million in flood damages.

In late November, the Federal Emergency Management Agency made federal disaster aid available to stricken residents and business owners in Caddo and Grady Counties. The assistance was authorized under a major disaster declaration issued for the state by President Clinton. The declaration covered damage to private and public property from the storms and flooding that occurred over the period of October 21-29. Specifically, individual and public assistance is available to residents of Caddo and Grady Counties; public assistance only in McClain, Carter, Jefferson, Cotton, Comanche, Kiowa, Tillman and Jackson Counties; and individual assistance only in Oklahoma County.

The assistance, coordinated by FEMA, can include grants to help pay for temporary housing, minor home repairs and other serious disaster-related expenses. Low-interest loans from the U.S. Small Business Administration will also be available to cover residential and business losses not fully compensated by insurance.

In addition, federal funds will be provided to affected local governments to pay 75 percent of the eligible cost for repairing or replacing damaged public facilities in Caddo, Carter, Comanche, Cotton, Grady, Jefferson, Kiowa, McClain and Tillman Counties. The declaration also made cost-shared funding available to Oklahoma for approved projects that reduce future disaster risks. Additional designations may be made later if requested by the state and warranted by the results of additional damage assessments. The damage assistance application period runs through January 26.



Counties eligible for various federal assistance as a result of flooding which occurred in Oklahoma from October 21-29. (Map courtesy Federal Emergency Management Agency.)

Financial Assistance Program Update

Approved at October 10 and November 14, 2000 Board Meetings

			Financial Assistance Program Update	
FAP Loans				
10/10/00	1	Rural Water District #2, Creek County	\$1,345,000.00	
11/14/00	1	Rural Water District #2, Wagoner County	\$775,000.00	
CWSRF Loans				
11/14/00	1	Big Cabin Public Works Authority, Craig County	436,000.00	
	2	Pocola Municipal Authority, LeFlore County	760,000.00	
DWSRF Loans - None				
Hardship Grants - None				
Emergency Grants				
10/10/00	1	Turkey Ford School, Ottawa County	\$97,750.00	
	2	City of Cherokee, Alfalfa County	69,040.38	
11/14/00	1	Hall Park Municipal Authority, Cleveland County	100,000.00	
Reap Grants				
10/10/00	1	Calument Public Works Authority, Canadian County	119,130.00	
11/14/00	2	Devol Public Works Authority, Cotton County	75,191.00	
	3	Calvin Public Works Authority, Hughes County	99,500.00	
	4	Wetumka Municipal Authority, Hughes County	90,000.00	
	5	Rural Water District #9, Cherokee County	69,900.00	
	6	Copan Public Works Authority, Washington County	150,000.00	
	7	Rural Water District #5, Osage County	72,510.00	
	8	Pittsburg Public Works Authority, Pittsburg County	99,999.00	
	9	Town of Carrier, Garfield County	99,980.08	
	10	Rural Water Sewer and Solid Waste Mgmt. District #3, Dewey Co.	99,916.43	
	11	Wapanucka Public Works Authority, Johnston County	35,250.00	
	12	Town of Colbert, Bryan County	59,080.00	
	13	Rural Water District #2, Atoka County	99,800.00	
	14	Town of Willow, Greer County	85,000.00	
	15	Rural Water District #2, Washita County	58,832.75	
			Totals as of 11/14/2000	
			FAP Loans	
			#Approved	224
			Amount	\$330,010,000.00
			CWSRF	
			#Approved	98
			Amount	\$337,411,384.24
			DWSRF	
			#Approved	9
			Amount	\$29,421,954.90
			Hardship Grants	
			#Approved	2
			Amount	\$1,038,752.30
			Emergency Grants	
			#Approved	459
			Amount	\$26,597,548.96
			REAP Grants	
			#Approved	256
			Amount	\$20,942,643.86

OKLAHOMA Water News

Bimonthly Newsletter of the

OKLAHOMA WATER RESOURCES BOARD

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